THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

SEPTEMBER, 1878.

THE DIFFICULTY OF DETECTING AND DIAGNOSING GLANDERS.

BY G. FLEMING, F.R.C.V.S., 2ND LIFE GUARDS.

PERHAPS there is no disease which the veterinary surgeon has to deal with, more difficult to diagnose or to ascertain the existence of, in certain cases, than Glanders; and the occurrenee of these cases is, unfortunately, at times more frequent than is desirable. This difficulty has often presented itself to me in the course of twenty-three years' practice; and the results of the experience I have had in the matter are chiefly to be found in "Veterinary Sanitary Science and Police," and in a paper which appeared in this *Journal* for March, 1876 (vol. ii., p. 189). For a number of years Glanders has been very prevalent in this country, and one of the causes for this may be the difficulty that surrounds its detection and diagnosis. There is grave reason to believe that the two forms of the malady—Glanders and Farcy—are sometimes mistaken for other disorders, and submitted to medical treatment, with what result may be easily conceived. Only a few days ago, we saw a case of acute Farcy in a horse standing in a stable with others, and which was

XUM

being treated by a veterinary surgeon. Two horses had already died in the stable, and the disease was pronounced by the medical attendant to be "blood-poisoning": a stupid, but evidently fashionable designation, without meaning, and employed, it would appear, to cover ignorance of pathological processes. As all the other horses in the stable were exposed to infection, it is not improbable that the owner will have reason to remember the destructiveness of "blood-poisoning," and its intractable character with regard to local and constitutional medication.

If mistakes are likely to be made in distinguishing Glanders and Farcy from other diseases, there can be no doubt that a similar danger exists in pronouncing horses to be healthy which are actually suffering from Glanders, but the symptoms of which are either masked intentionally or accidentally, by artifice or medical treatment; or are only present in such an obscure and imperceptible degree, that detection of the disorder is indeed difficult, if not impossible—even to the most experienced and observant practitioner—unless he has some clue to guide him, or something arises to rouse his suspicions.

These remarks are penned in order to introduce the following illustrative instance of the difficulty attending the detection of Glanders, and the care the veterinary surgeon should exercise in arriving at a conclusion as to the presence or absence of the disease, as well as the value of ascertaining the history of such cases, and resorting to experimental inoculation in order to test the existence of the virus in certain fluids or discharges from the suspected animals.

In last December I was requested to visit a village in Sussex, not far from Brighton, to inspect some horses; and on the 21st of that month I found myself there, and in conference with the medical gentleman who had invited me, and who was a practitioner in the locality. He was to a certain extent interested in the horses he had asked me to inspect; and though he knew nothing of veterinary medicine, and had never seen a case of Glanders—he having spent nearly the whole of his professional career in Australia, where that malady is unknown—yet he was suspicious of their condition, and all the more so since he had

read the section on Glanders in "Veterinary Sanitary Science." He furnished me with the following history, which, I need not mention, was of the utmost value to me in forming an opinion.

Four valuable light-van horses had been sent from London to a farm not far from the village; this farm belonged to their owner, a well-known town merchant, and they had been sent to pasture because of their being affected with a *cold* of which they could not be cured there, and which had caused another horse in the same stable to be condemned and destroyed. On arrival at the farm, the four horses were submitted to treatment by the bailiff—this treatment consisting of medicines administered internally, but chiefly of astringent injections up the nostrils, with the object of checking the discharge therefrom. Under this treatment one of the horses had "recovered" a short time before my visit, and had been sent to work in London. The other three were at pasture and still undergoing treatment, but they were so nearly "cured," that if my opinion dispelled the suspicion which haunted my medical friend's mind, they would also be sent back to town as fit for work.

The suspicion which was the cause of my visit arose from the following circumstance. The donkey which drew the cart of an old man who supplied the doctor's kitchen with firewood was worn out; and the doctor having been offered, a short time before, another that was depastured in a field adjoining that in which the three horses were kept, thought it would be a charitable act to accept the animal, and give it to the wood-carrier. Two or three days previous to his writing to me, he went to the farm to claim the donkey, but found it had died that morning—death being due, according to the farm labourers, to a kick on the face from one of the three horses; for though in separate fields, the heads of the donkey and horses came frequently in contact through a wide-barred gate between the fields, and the former was continually biting at the latter, which caused them to retaliate by biting and kicking. On examining the dead donkey, the doctor was struck by the peculiar lesions about the face and in the nostrils—lesions quite unlike those which would be produced by a kick, but which (as he had never seen Glanders) he thought might be due to Pyæmia;

XUM

though this could scarcely be, as they were entirely confined to the head, and consisted of phagedænic ulcerations of the *septum nasi*, ulcers of a chancrous character on the face, and a purulent discharge mixed with blood from the nostrils, with a horrible stench of carious bone. On consulting the above-mentioned work, the suspicion was engendered that the animal had died from Glanders, and if so that it might have been infected by the horses, as there was ample opportunity for the transfer of the virus.

This history was, of course, of great value, and such as no one but a shrewdly observant and reasoning medical man could have furnished. After becoming possessed of it, I went to examine the horses, the doctor accompanying me. They were in good condition, considering the season, and the fact that they were running out of doors, their only shelter being an open shed. When caught, they were severally inspected. The bailiff informed me that when they arrived at the farm, there was a nasty sticky discharge from one or both of their nostrils, a raw place in the nostril of one, and swelling of the glands between the lower jaw in all of them. The discharge had now nearly ceased, the glandular swelling had gone, and the sore had healed—all due to his medication. Unluckily, the nasal injections had been employed immediately before our inspection, so that nothing of the discharge could be seen. The Schneiderian membrane in all of the horses looked clean, and was about normal in tint. In only one of the horses was there any characteristic tumefaction and induration of one submaxillary lymphatic gland; but the mass was very small—scarcely larger than a hazel nut. There was nothing whatever about either of the horses which would have led even a skilled veterinarian, who had not known the history of the case, to suspect the existence of Glanders; and if he gave a verdict that they were free from disease, he could scarcely have been held blamable. A close examination, however, of the horse which had the indurated gland, and which the bailiff said was the one he observed had a sore in its nose when it arrived, discovered the peculiar stellate cicatrix of a Glander ulcer at the lower part of the *septum nasi*, on the side corresponding to the gland, and inside the false nostril two very

minute Glander nodules, surrounded by their bright-red areolæ. There were no traces of Farcy.

With these suspicious indications existing in only one of the horses, and notwithstanding the doctor's information, I could not venture to give a definite opinion without further acquaintance with the condition of the animals, as they were valuable, and there was no pressing necessity for a decided negative or affirmative reply. I therefore recommended the most careful isolation of the horses, the discontinuance of medical treatment, and when the discharge became again copious in the horse with the stellate cicatrix, that a donkey should be purchased and inoculated with some of it. The latter operation the doctor promised to perform.

On January 5th I received a letter from the doctor, reporting that all the horses were nearly as ill as when they first arrived from London, and that he had procured a donkey and inoculated it on the 3rd inst. On the following day (6th), I visited the farm, and found the three horses exhibiting most suspicious symptoms: the Schneiderian membrane had the Glander tint, the submaxillary glands were indurated and nodulated, and the discharge was glanderous in character, but there was no visible ulceration in the *septum nasi* in either of the horses. In the one which had the nasal cicatrix, however, and which was now decidedly the most affected, I passed the plume of a white goose-quill as far as I could up the nostril on the cicatrix side, and brought it down again tinged with blood. From this animal the donkey had been inoculated. One of the horses had a short hacking cough, and a muco-purulent discharge from one eye.

On examining the donkey, which had been inoculated three days previously, I found the lips of the wound—which was on the side of the abdomen, near the flank—somewhat everted, the space between filled with an amber-coloured glutinous matter; a number of small inflamed lymphatic vessels radiating from it; and quite close to it a hot, painful, well-defined tumour about the size of a pigeon's egg, and soft and fluctuating. The donkey was dull, and somewhat stiff in the hind-leg on the inoculation side.

XUM

The result of the inoculation, together with the history and the present state of the horses, left no doubt whatever in my mind that they were affected with Chronic Glanders, and must, with the donkey, be destroyed. Accordingly, I advised the doctor to report the occurrence to the veterinary sanitary inspector; and as I thought two or three days might elapse before they were killed, I inoculated the donkey in two places in the pectoral region with fresh discharge from the least affected horse, and requested the doctor to inform me as to the result, as well as the termination of the unfortunate business.

On January 28th he forwarded me the following statement:—"Your opinion respecting the nature of the disease from which Mr. ——'s horses were suffering was confirmed by after events. When I saw the donkey on the Tuesday following your last visit, the swellings at and near the seat of my punctures had increased in size, and there was a thickened cord of lymphatics as large as my thumb, extending backwards. At the site of each of your punctures there was swelling with some suppuration, etc. Notice was given to a veterinary surgeon who was supposed to be the inspector, *and he expressed a distinct opinion to the effect that the disease was not Glanders.* Mr. —— (the owner) thought this afforded him an opportunity of watching the progress of the disease in the donkey, which, towards the end of the week, became generally 'seedy.' On Sunday it was evident to me that it would soon die. At this time I noticed a slight discharge from one nostril. On Wednesday, he—or rather she—did die, and then it was discovered that the person previously applied to was not the Government inspector. The right man having been made acquainted with the state of affairs, expressed a wish to communicate with you before ordering the horses to be destroyed, and I forwarded your address, stating at the same time that I knew you entertained no doubt as to the disease being Glanders. The horses have since been shot. I have ascertained that one horse in the London stables from which they came had previously been condemned and destroyed. Of the one that was returned as 'cured,' I have not obtained any trustworthy information." I did not receive any communication from the inspector, nor any tidings as to

whether a *post-mortem* examination was made of the horses. An examination would have been particularly interesting and instructive.

This instance once more demonstrates the urgent need there is for circumspection on the part of the veterinary surgeon, in dealing with cases of suspected Glanders; and also the great value of experimental inoculation as a test of its presence or absence in suspected animals. In dealing with such a formidable malady, members of the profession cannot be too cautious, as a hasty, ill-considered, or erroneous opinion, may be fraught with the greatest danger to the public, no less than to private individuals.

DEATH OF A HORSE FROM CANCEROUS TUMOURS.

BY S. M. WILSON, M.R.C.V.S., 12TH LANCERS, BOLARUM, DECCAN, INDIA.

I SEND you the history of a case which I hope may be worthy of insertion in your valuable *Journal*.

About six weeks ago, a troop horse was brought to my infirmary stables, with the report that he was very thin and weak, and that he was unfit for duty. On inquiry, I found that for some months past the horse—a Persian, and seventeen years old—had kept falling away in condition, but continued to feed well: indeed, he had extra forage. I examined him, but was unable to find any cause for the wasting away. The pulse was full and natural; visible mucous membranes healthy; teeth regular; breath sweet, and respiration normal. The animal was in good spirits, and fed well. I first gave him aloes ʒv., thinking that worms might be partly or wholly the cause; but without good effect. I then followed with tonics and stomachics, in the form of ammoniæ carb., cupri sulph., ferri sulph., chiretta, etc., etc., varying these at different times. Walking exercise was also ordered. The horse received full diet, and was well groomed and cared for.

This continued, the animal daily becoming weaker and thinner, until the 30th May, when he lay down and showed symptoms

of pain in the off side of the body, and on pressure he also manifested indications of pain in the liver. Latterly, the visible mucous membranes had become more pallid and the pulse weaker. On perceiving the pain thus shown, I applied mustard over the region of the liver, put the patient on soft diet, and kept him as quiet as possible. The pain seemed to be relieved in two or three hours, and for two days the horse was apparently quite well.

On the morning of June 2nd, I had ordered a small quantity of grain to be given in his mash, as he seemed much better and more lively. He began his morning feed, and was eating heartily, when he dropped down dead as a stone.

The *post-mortem* examination revealed a large schirrous tumour attached to the upper part of the middle lobe of the liver, close to the apex. The size of this tumour may be estimated by the circumference, which was twenty-one inches. It was almost round, and its weight was about seven pounds. There were several other tumours of the same character, but of smaller sizes, attached to the liver, stomach, intestines, and peritoneum. On opening the stomach, I found in the pyloric region a large malignant tumour in a state of ulceration. The formation and character of this appeared to me exactly what Professor Williams, in his "Principles and Practice of Veterinary Surgery" (p. 388), describes as "Colloid" or "Soft Cancer." To quote his words, "It consists of fibres so arranged as to form alveoli or spaces varying in size, and containing a soft viscous and nearly liquid matter, grey or amber-like in colour, but sometimes opaque, and of a greenish-yellow hue." This had assumed the latter colour. The smell from it was most offensive. The outer coat of the stomach was schirrous, and thickened to the extent, in some parts, of two or three inches. I also found several "bots" in the stomach. The heart and lungs were healthy, though pallid. The kidneys were perfectly healthy.

[We are greatly indebted to Mr. Wilson for his valuable communication, and we need not say how much we appreciate the efforts of our colleagues in furnishing us with information re-

garding the diseases of the domesticated animals in India, as well as in our colonies all over the world. Upon British veterinary surgeons rests a great responsibility with respect to the advancement of comparative pathology and cognate subjects; inasmuch as they have the opportunity of adding to our stores of knowledge, such as the profession in no other country possesses. With our colleagues located in all parts of our immense empire—the greatest the world has ever seen, and embracing, as it does, the widest range of climate and every kind of domestic animal—we are in a position to obtain knowledge of the most important kind relative to animal life in health and disease, under every variety of modifying influence. Nothing affords us greater pleasure than publishing the facts gathered by our co-labourers; and any assistance we can lend in the way of encouragement, investigation, reference, advice, or otherwise, will be readily forthcoming when required.—ED. *V. J.*]

NOTE-BOOK CASES.

BY A. HURRELL, M.R.C.V.S., SOUTHMINSTER.

CASE I.—CURIOUS INJURY TO THE BLADDER OF A MARE.

THIS mare, the property of Mr. J. Maskell, St. Lawrence, was at work in the fields with a roller, and was being driven by a boy about ten years old. A man, who was also at work close by, noticed there was something wrong with the mare; and on questioning the boy, he admitted having thrust a stick, sharp at the end, up the vagina of the mare. As the mare appeared to be in great pain she was sent home, and our assistance was called in. We found her breathing greatly accelerated; pulse 90, and hard and full; apparently suffering much pain, with anxious expression. Examined the vagina and surrounding structures, but could find little traces of external violence, there being very little swelling, and no wound could be detected. So we came to the conclusion that she was suffering from some internal injury, but were not able to say what or where. The

prognosis was very unfavourable. We had hot fomentations and spirit lotion applied to the swelling, administered oleaginous purgatives and sedative medicines, and ordered beer, gruel, etc., to be given, combined with sedatives if the pain should continue during the night. On attending early next morning we found the mare dead, she having died in excruciating agony.

Post-mortem Examination.—On opening the abdominal cavity we found traces of Peritonitis, and also perceived a strong smell of urine; on removing the bladder and its appendages, we found there was great discoloration and congestion of the *meatus urinarius:* the stick having passed through the *meatus* and then through the wall of the bladder, making a hole apparently about an inch in diameter, about four inches from the neck. The bladder was perfectly empty, and its walls contracted to an extraordinary degree.

Subsequently the boy was prosecuted by the owner of the mare, and was sentenced by the magistrates to three weeks' imprisonment and four years in a reformatory.

Case II.—Spasm of the Glottis.

Having read in the July number of the *Veterinary Journal* Mr. Fleming the editor's interesting account of Laryngismus Stridulus, I thought that perhaps the following case, which recently came under my notice, might be somewhat interesting.

On July 9th my attendance was required to see a horse belonging to Mr. L. J. Kemp, of Southminster, which was reported as breathing "very bad," and making a very great noise. On arrival, a short time afterwards, I found the horse apparently quite well and eating, and from inquiries I learned that until the day previous he had never exhibited any signs of disease. He was "taken all at once," to use the man's expression, and made such a noise that it could be heard a long way off, but in a few minutes he appeared to entirely recover; and the same thing occurring the next day, I was called in to see him. Not being able to find anything wrong externally—no swelling nor soreness of the throat—I explored the mouth, epiglottis, etc., but nothing abnormal could be felt; so I thought he must be suffering from Spasm of the Glottis. I

applied a stimulating liniment to the parotid gland and down the trachea; gave febrifuge medicine, he being able to swallow a bolus without any difficulty; ordered slop food, and to be kept quiet. Being apparently well on the 12th, they put him to slight work, and almost immediately he was taken ill again. I then applied a strong blister all over the region of the throat, and afterwards a mild stimulating liniment to keep up the action. No signs of the disease appeared for several days, until he was taken to assist in pulling a horse out of a ditch, when he again made a great noise, and the man said he seemed to swoon, and fell down; but he soon recovered, and since that time has shown no signs of disease. He was put to very light work for a week, and since then has been at plough regular.

The horse when seized had every symptoms of being choked, large quantities of saliva and secretions coming from his mouth and nose; but choking from foreign matters was impossible, as he was reined up and unable to get a mouthful of anything to eat. So severe were the symptoms, that the man in charge thought the horse must die before he could release him from the wagon. At no time when he was seized was he drawing a heavy load.

I might also add that a case came under our notice, some years ago, in which the horse was attacked several times when in his loose box. The symptoms in this case were more severe, tracheotomy having to be performed on him on three different occasions. These attacks occurred when he was at perfect rest, and there was not the slightest sign of disease, either externally or internally.

AN OBSTINATE SKIN DISEASE OF THE HORSE.

BY L. BUTTERS, M.R.C.V.S., NORWICH.

I TAKE the liberty of trespassing upon the valuable space of the *Veterinary Journal*, in the hope that the editor or some of its numerous readers may enlighten me upon the pathology and treatment of a very troublesome skin disease in the horse, which

I have no doubt has been often met with, and cases of which I am continually called upon to treat; but with very little success, I am sorry to say, although I have tried every conceivable remedy. The disease I allude to has hitherto been pretty generally confounded with "Mange," and, like it, breaks out in patches all over the body, and is accompanied with great, sometimes intense, irritation. All classes of horses are subject to it, no matter what state of "condition" they are in. I have found those apparently in perfect health—with fine coats, well up in flesh, etc.—just as liable to it as those badly fed, groomed, and generally neglected.

The symptoms are intolerable itching, rubbing the tail, mane, etc., biting the shoulders and back, sides of and under the chest, and front of the breast. The parts will become slightly raised, and covered with a serous exudation, which is sometimes very copious; and in drying forms a crust or scab, which in time falls off, leaving the part denuded of hair: the process meanwhile going on in some other place, or entirely ceasing for a time.

I cannot describe the disease better than by relating two or three cases which have come under my notice recently. The first was a chestnut cob. He had been treated several times, for two years previously, by two or three practitioners; and when I first saw him he was a perfect spectacle—the skin of a large portion of his body being nearly raw, and even bleeding in some places. I prescribed an emollient lotion, with which he was dressed; and he was free from irritation for some time, the skin becoming healed. About a week or so afterwards I was hurriedly sent for at night, the messenger stating that the horse was mad, and tearing himself to pieces. He certainly appeared to be so on my arrival, for the perspiration was pouring from him; he was frantic, pawing the ground, jumping about, and would every now and then flay himself with his teeth. I ordered him to be continually sponged with cold water, and afterwards with dilute acetic acid. He was so violent that he had to be restrained by means of a twitch. I also bled him largely from the jugular vein (at the request of the owner), and administered full doses of opium. He was at our infirmary for several months, and had numerous attacks similar to the one described, during

which time I tried every conceivable treatment—both locally and constitutionally—the description of which would fill pages; but without beneficial effect. He was turned out in the spring, and when I last saw him he looked pretty well, although the groom said he still rubbed himself. The hair was darker in colour over the previously diseased patches.

The second case was also a chestnut cob, which I examined for the owner as to soundness, and was a fine healthy-skinned animal when purchased. Some months after he commenced rubbing himself; and thinking it was "Mange," I tried all the dressings usually applied for that complaint, but without any good effect. I never could detect any parasites on examining the skin microscopically. This horse, although the irritation was never so intense as in the preceding case, was equally bad in appearance. The patches were more raised, and looked as if the skin had been blistered with cantharides; there being often a very copious effusion of serum. These patches were principally about the shoulders, which for weeks were completely denuded of hair. Every kind of treatment was tried,—liq. arsenicalis, iron, vegetable tonics, etc.,—besides topical applications, for months, but without any favourable result; the animal looked a wretched object, and was finally turned out in the spring in a straw yard. Upon calling on other business in the following autumn, I was shown the horse, and I scarcely knew him: he had recovered his condition, his coat shone, and with the exception of patches of hair being darker in places, there was no trace of his former disease. I expressed my satisfaction, and left; but upon my next visit I was told I had scarcely done so when he laid three or four places on his body completely bare, and the owner sold him in two or three days.

Another case—a pony—has never been free from it for years, and has to wear a side-stick to prevent him biting himself raw. The only way I can keep his skin healed, is by applications of a pretty strong lotion, composed of liquor plumbi to two parts of water, with which he is dressed morning and night. This I have found better than any other remedy; two or three applications, after the places break out, dries them up.

There is no evidence of the disease being contagious, as I

have never seen it spread in a stable. I have repeatedly examined the scurf microscopically, but could never detect any parasites. I have also never seen it affect the legs of the animals. I have several cases now under treatment, and I can assure you they are very unsatisfactory ones to have anything to do with. Therefore, anything I may learn through penning these few remarks with regard to the nature or treatment of the malady will amply repay me for my trouble.

[In the *Journal* for next month, we will comply with our correspondent's request, and give a notice of the disease to which he refers, and which we very often have had to treat. We hope those of our readers who have studied, and been successful in curing it, will favour us with their views and experience.—ED. *V. J.*]

AN EXTRAORDINARY MALFORMATION OF THE GENERATIVE ORGANS IN A YOUNG HEIFER.

BY A. E. MACGILLIVRAY, V.S., BANFF, N.B.

ON the 19th of June last, I received a letter from my friend Mr. Cooper, V.S., Fordyce, N.B., informing me that he had forwarded per rail to my address a box containing the whole of the generative organs of a heifer which he had caused to be slaughtered the previous evening, and asking me to examine the same and report to him.

As I am pushed for time, and have little leisure to enter into the minutiæ of this interesting case, I shall here merely copy my reply to Mr. Cooper, which was as follows:—

"Your box and letter both came to hand in due course. The uterus was a most interesting specimen indeed. I never either saw or heard of anything like it. The vagina proper had no connection at all with the external parts of generation, but, on the other hand, internally it formed a continuous cavity with the body and right cornu of the uterus; which cavity (composed of vagina, uterus and right cornu) was filled with light-

coloured turbid serum without any smell. The left cornu of the uterus formed a distinct and completely isolated cavity by itself, and was well filled with perfectly clear serum.

"There had *never* been any connection whatsoever between either the vagina and the outside, or the left cornu and the body of the uterus. The first cavity was large and filled with a turbid serum; the second cavity was comparatively small and contained clear serum. The walls of both cavities were thick, tough, and intact, there being no sign of any natural or artificial opening or tear in either of them; and my opinion is that there never had been any opening (from the outside) into the vagina beyond the *ostium vaginæ*. Either your hand or the bull's penis had made an opening or tear (to the left), between the walls of the distended vaginal sac and the pelvic attachments of the same.

"The quey had been three times in heat, but I don't think there had ever been any direct or indirect connection between the ovaries and either of the *cornua uteri*.

"I suppose there is little use in your inquiring whether the owner ever saw the usual bloody discharge from the quey's passage during heat, and *before* she was served with the bull—as undoubtedly there must have been blood *after* she was served.

"It is a most peculiar case; but, owing to the malformation, it cannot furnish any data with regard to menstruation. I shall perhaps make it the subject of a communication to some of the veterinary magazines."

A few days after writing the above, I met Mr. Cooper, and he informed me that the owner of the heifer, being of an observant nature, had taken notice of and been astonished at the absence of the usual bloody discharge at the periods of heat in the heifer; and, further, he made the remark to Mr. Cooper that "these white heifers generally made themselves a mess behind when in heat"; but he had seen nothing of this kind in the slaughtered heifer, which was a white one.

My assistant, Mr. Adam Sievwright, M.R.C.V.S., was present, and aided me in examining the uterus and appendages—which we did with the utmost care and caution; and there are four facts

which we would like to chronicle in the pages of the *Journal:* namely, *first*, that there was no connection between the ovaries and the uterus; *second*, that there was not the slightest appearance of *blood* in the fluid contents of either of the isolated cavities above mentioned; *third*, that there was no bad smell about either the turbid contents of the large, or the transparent contents of the small cavity; and *fourth*, that there most undoubtedly had never been any connection between the vagina and the outside, or between the isolated left cornu and the body of the uterus.

IS RABIES INFECTIOUS AS WELL AS CONTAGIOUS?

THE question as to whether Rabies is infectious has been but little discussed, and the general belief—founded on long centuries of painful experience—is that it is a purely contagious disease, and is commonly transmitted by inoculation. We have, indeed, but few instances which would incline us to the belief that it may be conveyed by infection; and it is the rarity of these, and the difficulty of arriving at satisfactory conclusions when they do occur, that has probably caused us to overlook the question of infectiousness. Some of these instances have been given in "Rabies and Hydrophobia," but we could not then venture to give an opinion upon the point. Perhaps the most notable was that furnished by Mr. Trevalyan, who, in his correspondence with Dr. Bardsley, stated that, after losing one pack of hounds from Rabies, he not only removed the straw, but had the benches scalded with boiling water, and afterwards all the joints, cracks, etc., painted over and filled with hot tar; the walls were then whitewashed, and the pavement cleaned with hot water. Thus secure, as he thought, he collected another pack; yet Rabies broke out year after year. In consequence of this, the pavement tainted with the secretions was removed, and the earth in which it was embedded thrown into the river; the kennels were then new painted and whitewashed, and ever afterwards the pack was free from infection.

To the instances we have collected in the above work, we have now to add another, which we owe to the kindness of Tedbar Hopkin, F.R.C.V.S., of Manchester, and which we publish without comment at present. Mr. Hopkin writes under date of August 7th: "A curious fact has just occurred. A retriever and two terriers were sent here on June 17th of this year. The retriever was put in a kennel in which we have had several cases of Rabies,—*but the place was thoroughly disinfected and cleansed under my own personal direction.* So far as I can ascertain, the dog had not been bitten before he came here in June, and certainly has not been since then. *Yet he died yesterday, with all the symptoms of Rabies well marked.* Did he become rabid from contagion or infection, or was the disease of spontaneous origin? Several months had elapsed since the other rabid dogs occupied the same quarters."

It was in view of the malady being perhaps infectious, that in the work above quoted we laid particular stress upon such sanitary measures as cleansing and disinfection of kennels and other habitations which had been occupied by rabid animals.

THE BROWN INSTITUTION.

DR. BURDON SANDERSON has retired from the superintendence of the above establishment, and our curiosity is rather excited as to who his successor will be. The institution being endowed for the purpose of investigating and curing the diseases of animals, and for the advancement of comparative pathology, it would strike the majority of people that a member of the veterinary profession well skilled in the maladies of the domestic animals, and in their management and manipulation, as well as being thoroughly competent to undertake scientific researches into the nature, etc., of their disorders, would be better fitted for the vacant post than a member of the medical profession. We trust that this view will be adopted by the Senate of the University of London, with whom the appointment rests; and that Professor Duguid, the present veterinary representative at the Institution, may be selected, if his name has been brought forward. Of the Professor's competency there can be no doubt whatever, and he has had a large share in the investigations already carried out in the establishment,—indeed, from the very nature of things, it is evident that on the veterinary surgeon there must devolve the major and most important portion of the work. Of our colleague's ability as a pathologist, our own pages testify; and his fitness to undertake investigations into the causation of disease is acknowledged by the Royal Agricultural Society of England, whose veterinary surgeon he now is. We are confident that, if elected, Professor Duguid will prove to be an excellent superintendent, and render the Institution more useful and worthy of its endowment than it has hitherto been.

Editorial.

THE CONTAGIOUS DISEASES ACT OF 1878.

After a most tedious and, for the subject, extraordinarily protracted discussion in the Houses of Parliament, the Contagious Diseases Bill has become an Act, and its provisions will soon be in force in the three kingdoms. We have hitherto refrained from commenting on its progress through the legislative chambers, because we believed our readers would closely watch it from day to day, while it was being altered, modified, and transformed; and until it had passed through the House of Commons, no one could possibly predict what it would ultimately become. When it left the Lords, though far from perfect to those who understand what is needed for the prevention and extinction of the maladies with which it chiefly dealt, it was yet likely to prove very useful; and if properly worked when it became an Act, would doubtless have conferred great benefits on the public, as well as the agricultural community, which has been so severely taxed by the ravages of contagious diseases for many years. But in the Lower House it has been so mutilated, changed, and emasculated, that we are almost inclined to think the Government would have been justified in withdrawing it, and allowing things to go on in the old fashion until those honourable members who opposed it had made themselves acquainted with the very important subject with which it dealt, and of which, though they contrived to spend much time in talking, they were evidently profoundly ignorant; or until they were willing to sacrifice party spirit for the national welfare. There cannot be a doubt that the benefits the Bill was intended to confer were, to a great extent, sacrificed on the shrine of political partisanship; and that the only judicious measures ever attempted in this country for the permanent eradication of most desolating and harassing, but preventible scourges, were rejected for reasons which will not bear investigation.

In a country in which the *Ars Præveniendi* has been but little studied or understood, it could not, of course, be anticipated that a broad and comprehensive sanitary measure could be introduced into, much less passed through, our Parliament. Veterinary science is still in its infancy among us, and the country has not been fortunate in gaining a knowledge of its capabilities until very recently. For many years, we believe, there was a Government veterinary adviser; but what he advised upon, or what kind of advice he may have given, we have no evidence to show except that which is to be found in Blue Books—and that is not particularly satisfactory or edifying. At any rate, the ravages of contagious diseases were as great and discreditable to us as before the creation of that authority. Within the last few years the adviser has certainly shown more energy and knowledge, and he has made his office less of a sinecure and more useful than formerly; but it would appear that his influence is but limited, and his opinions so indefinite that friends and opponents of legislative measures can quote them to suit their purposes.

Therefore it is that the Bill as originally introduced was only a partial remedy, and had scarcely any claim to be designated a Bill dealing with

the contagious diseases of animals, as it may be asserted that it really only dealt with four or five maladies out of some dozen which urgently require legislative interference. The most important clause of the Act now passed, instead of being compulsory, as was originally the case, is permissive, and the Privy Council can deal with it as it thinks fit. After the ample experience we have had of the Privy Council's dealing with the maladies in question, we have but little confidence in the future, and especially if the present Government should be changed, and any of the opponents of the Bill be elected to the Privy Council.

The discussion in the House of Commons, and especially the speeches made by some of the members who opposed the Bill, demonstrated how little was known of the nature or effects of contagious diseases; and the only two members of the medical profession who ventured to address the Speaker, made it clearly manifest that even those who have studied human medicine are really very imperfectly acquainted with veterinary sanitary science. Much of the veterinary evidence quoted freely by both sides was little else than confusing; and it sounded somewhat painful to hear those whose names and opinions were thus introduced spoken of as "muddle-headed professors."

As it now stands, the Act may do some good, but everything will depend upon the manner in which its provisions are carried out. In this respect the veterinary profession will have imposed upon it much responsibility, and we earnestly hope that it will acquit itself honourably of the heavy duties it will be required to undertake. It is rapidly gaining the confidence of the country, and the House of Commons deserves its thanks for protecting its interests in a motion brought forward by Mr. Barclay, but which was negatived by a large majority. It is sincerely to be desired that before long we shall have one or more representatives of our profession in Parliament. The recent discussion proves the great need for this; and as time wears on, the need will become an urgent necessity, as veterinary science itself has now become an essential of civilization.

Another urgent requirement of the age is a Government Veterinary Sanitary Board. It is not a wise arrangement which makes one man—no matter what his abilities may be—the sole veterinary adviser of the Government in such a gravely responsible matter as the health of the domestic animals in this country. For their health is part—and a large portion indeed—of the public health; and to place all this in the hands of one man is what the most enlightened countries in Europe have never dared to do—though they can boast of the most competent veterinarians in the world.

We also need wise measures for the prevention and suppression of contagious diseases other than those dealt with in the new Act, and which, while on the increase every year, are damaging to property, and more or less a source of danger to the public health. The inspection of flesh for food, and the establishment and supervision of slaughter-houses, are also matters which demand serious attention. When they may receive it, no one who has studied the course and fate of the Contagious Diseases Bill of 1878 could tell. The day appears to be hopelessly distant.

NEW DRUGS, APPLIANCES, ETC.

Gelsemium Sempervirens.

The value of this drug has been proved in human practice, and appears likely to constitute a valuable addition to the veterinary pharmacopœia. Dr. Bartholomew, in the *Practitioner* (1870, p. 208), describes the physiological action of this drug as being as nearly as possible analogous to conium, and not very dissimilar to strychnine or Calabar bean.

The action of the agent appears to be exerted primarily on the cerebro-spinal centres, and secondarily on the organs of respiration and the heart; the motor nerves of the eyes appear to be the first disposed to its influence.

In Fevers—particularly those due to malaria—Rheumatism, inflammatory diseases, in "after pains," and Neuralgia, its action has proved most effectual.

In those troublesome cases in veterinary practice attendant on parturition—particularly in the cow, and we may say sheep—this agent may prove a most valuable addition to the stock of our pharmacy; and it appears that its action is easily controlled—for in case of an over-dose, or too prolonged exhibition of the agent, its effects are speedily stayed by the administration of diffusible stimulants such as spts. ammon. aromat., ammon. bicarb., brandy, tinct. of prickly ash bark (*Xanthoxylum paxineum*). At some future time we may again refer to the therapeutic value of this drug.

THE FELLOWSHIP EXAMINATION OF THE ROYAL COLLEGE.

It gives us unalloyed pleasure to announce that four candidates for the Fellowship Degree have been successful in their examination, and the list receives their names. They are Captain Russell, Grantham; A. Spreull, Dundee; C. J. Whitworth, London; and O. J. Hills, Leamington. We feel confident that the higher degree with which these gentlemen have been honoured will not suffer in value or estimation at their hands.

The examination took place at the Royal College of Veterinary Surgeons on July 31st; and in addition to the more scientific and professional tests, an examination in general education was conducted by the Dean of the College of Preceptors.

The following were the written questions which the candidates were desired to answer:—

Physiology.

(*Professor Duguid.*)

1. Describe, briefly, the distribution and functions of the pneumogastric nerve. State what symptoms are produced by the division of both pneumogastric nerves in the cervical region.

2. Name the channels by which waste products are eliminated from the body, and state by which and in what form nitrogenous elements are excreted.

3. How is animal heat produced? State how it is influenced by the nervous system.

Comparative Anatomy.

1. State the chief differences observed in the respiratory organs of mammals, birds, reptiles, and fishes.
2. Describe the differences observed in the arrangement of the digestive organs in ruminants, rodents, and birds.
3. Describe the circulation of the blood in reptiles and fishes. Mention any points in which they resemble and differ from the circulation in the mammalian fœtus.

Pathology.

(*Mr. Harpley.*)

1. Describe Rhachitis. What are its causes, and in what animals is it most frequently observed?
2. What is the nature of Scrofula, and how is its presence in animals manifested? Give the derivation of the term.
3. Describe and compare the principal effects of acute inflammation occurring in the mucous, serous, and synovial membranes; taking for illustration the conjunctiva, tunica vaginalis, and synovial membrane of the coxo-femoral articulation.

Therapeutics.

1. Enumerate the primary and chief secondary constituents of Opium, commencing with the most active; and give indications for the exhibition of this drug.
2. What are the therapeutical uses of the Ergot of Rye, and what accidents may occur from its injudicious administration?
3. Describe the physiological action of Digitalis, and its uses as a medicinal agent.

Surgery.

1. Mention the structures involved in a severe case of cervical Abscess (Poll-evil), and give an outline of surgical treatment of the same.
2. Describe the various methods of performing the operation of castration in the horse; mention the treatment preparatory and subsequent to the operation, and also any serious consequences that may arise.
3. Give the surgical anatomy of the inguinal canal, and the method of operating for the cure of inguinal hernia.

Dietetics.

(*Mr. Fleming.*)

1. Mention the chief alimentary principles of food. State the purposes they severally fulfil in the process of nutrition; describe the changes they undergo in digestion—pointing out the agencies by which these changes are effected.
2. Describe the chemical changes which have taken place in "Mow-burnt" or "heated" hay; and the evil results which may follow its injudicious use as food.
3. What are the chief chemical constituents of beans, and which of them render these most valuable as food?

Sanitary Science.

1. Mention the sanitary precautions to be observed with a view to the prevention of Abortion in the mare and cow.

2. What are the insalutary influences which are supposed to lead to the development of Tuberculosis in animals?
3. What are the principal requirements of a well-constructed stable?

EPIZOÖTOLOGY.

1. What is Influenza? What influences are supposed to produce it, and on what agencies is its geographical extension supposed to depend?
2. What is Anthrax? How does it usually manifest itself in animals? to what is its presence due? and how is it extended?
3. Describe the Sanitary Police measures most appropriate for the suppression of an extensive outbreak of Rabies.

NEW MEMBERS OF THE PROFESSION.

AT a meeting of the Scottish section of the Court of Examiners of the Royal College of Veterinary Surgeons held in Edinburgh on July 18th, the following students from the New Veterinary College, Edinburgh, were admitted members of the profession:—

Mr. Richard Ellis, Liverpool.
" Josiah Simpson Walker, Kendal.
" Albert Inkerman Douglas Drake, Edinburgh.
" Richard William Tinsley, Malton.
" Henry Surmon, London.
" George Edward Milton, Stockbridge, Hants.
" Harry Low, Norwich.

At the several meetings of the same section held in Edinburgh and Glasgow on July 16th, 17th, 18th, and 22nd, the following students passed their "First Examination":—

Edinburgh Veterinary College.

Mr. William Hill,
" Johnson Gibbins,
" Hugh Qwynn Lloyd,
" John Taggart,
" Joseph Donald,
" David Doig,
" Christopher Black,
" William Calvert,
Mr. Joseph Woods,
" Peter Manuel,
" John Ward,
" William Ryan,
" Robert Levie,
" Thos. Graham Nairne,
" George Rogerson,
" Thomas King.

Edinburgh New Veterinary College.

Mr. George Whitehead,
" Metcalf Smith,
" William Livock,
" George Edward Nash,
" Alfred Moritz Michaelis,
" Harry Hunt,
" Wm. Edward Smith Richmond,
" James Welsh Canty,
" James Joseph Mullally,
" Arthur Joseph Dobbyn,
Mr. Archibald Munro,
" William Summers,
" James Chalmers,
" James Fraser,
" John Fisher Thomson,
" John Aitken,
" Thomas Oldfield,
" John Richard Simpson,
" Wm. Owen Williams,
" Frederick James Richmond,
Mr. Thomas Caldicott.

Glasgow Veterinary College.

Mr. Robert Glass,
„ James Morton Howatt,
„ Thomas Anderson Douglas,
„ William Stewart,
„ John Smith,
„ John Wright,
„ Hugh Bradley,
„ Henry Mountney,
„ Alexander Milligan,
„ James Wyper,
Mr. William Stevenson,
„ Robert Stevenson,
„ George Pollock,
„ Amyas Llewellyn Appgriffith Heard
„ Allan Pollock Blue,
„ William Wallace,
„ Hugh McKenzie,
„ James Nisbet,
„ James Murphy,
„ Thomas Bowie,
Mr. Ebenezer Brown McLeay.

THE FITZWYGRAM PRIZE COMPETITION.

NOTICE of the above Competition having appeared in this Journal, and circulars having been issued to those graduates of the Royal College of Veterinary Surgeons who had graduated since May 1877, as also to the students of the different veterinary schools, the written examination took place at the Royal College on June 13th, and the *vivâ-voce* and practical examination at the Brown Institution on the 15th.

The examiners were Dr. Craig, Edinburgh; T. Taylor, F.R.C.V.S., Manchester; A. Robinson, M.R.C.V.S., Greenock. Only two competitors appeared; their names are not given, but we understand that they both studied in London. In the written examination, the candidate bearing the No. 41 obtained 830 marks; while No. 49 received 503. The examiners in Physiology and Histology mention that the answers given by No. 41 were very creditable and clear; while those on Pathology showed a deficiency in practical knowledge. At the final examination, No. 41 obtained 321 marks, and No. 49 was awarded 285. The competitors were reported as deficient in all practical subjects, and in the "diagnosis of disease and soundness."

The Secretary states that, "both competitors having failed in obtaining the requisite number of marks, no award was given for the above prizes; but the donor presented to each candidate the sum of £10 for travelling expenses."

We are greatly disappointed with the result of this year's competition. That only two gentlemen entered the lists to contend for these handsome prizes, shows that something must be radically wrong, or at least that there is an absence of enthusiasm and *esprit* which, we fear, augurs badly for the future. But while deploring this indication of apathy and want of confidence on the part of those who should certainly give better promise of their ability and zeal, we confess that we cannot understand why No. 41 did not receive more favourable consideration at the hands of the judges. Last year the First Prize of £50 was awarded to Mr. Glover, who obtained a total of only 1100 marks;* while this year No. 41, who received 51 more marks (1151), is declared as undeserving of even the Third Prize. Comparing last year's report with that now before us, we find that in all "practical" subjects No. 41 obtained more marks than Mr. Glover, and also 26 more than Mr. Tipper, the best practical man of last year; so that we cannot understand the verdict of the judges, that No. 41 was *deficient in all practical subjects*. There is surely a mistake somewhere; and in drawing attention to the matter we

* See the *Veterinary Journal*, vol. v., p. 218.

believe we are doing a service to the generous donor no less than to the, at present, unlucky competitor. Nothing tends more to damp enthusiasm or discourage enterprise than apparent—though doubtless unintentional—injustice or unfairness.

We delayed publishing the report in last month's *Journal*, though it reached us very late, in order that we might have leisure to investigate what appears to us to be an oversight or mistake which, we doubt not, only requires bringing to the notice of the donor of these prizes.

CATTLE IMPORTATION IN AUSTRALIA.

WE have on several occasions alluded to the prohibition of cattle into Australia, from a dread of the introduction of contagious diseases, and have pointed out that with a proper quarantine and inspection system carefully carried out, there was really no necessity for depriving our Australian colonies of the great advantages to be derived from the importation of select stock. In doing so, we have shown that, with regard to importation, Australia stands on a very different footing to this or any European country. The long duration of the voyage, and the fact that only choice stock—always carefully protected from contagion—would be introduced, go very far to reduce the risks of importation to a minimum, while the inspection and quarantine at the ports of debarkation should complete and ensure absolute immunity from the invasion of those maladies from which our great cattle and sheep-rearing colonies are still free. We are therefore gratified to observe that, according to the latest intelligence from the Antipodes, New South Wales and Queensland have determined to remove the prohibition of stud cattle from Great Britain. The colony of Victoria, however, appears to be in favour of maintaining the prohibition—which, from all accounts, is nothing more or less than a real protectionist measure. "The fear of introducing disease," says a Melbourne paper, "is simply a bugbear, got up by a few interested stock-breeders, and has no existence in fact." Contrasting the evils of prohibition with the protection from imported contagion, due to the long and expensive sea voyage and quarantine on arrival, and the advantages of select importation, the same paper adds: "Our herds would derive great benefit, although a few individual breeders would be disappointed of their unreasonable profits, and also have to improve stock. Let us, then, take the common-sense view of it, and join New South Wales and Queensland in opening our ports and improving our herds. Indeed, it will be futile to maintain our present absurd embargo after the opening of the ports at Sydney, as prohibition would then involve the stoppage of the entire cattle trade that now finds its way to Melbourne by way of the Murray." If we mistake not, horses are imported into the colony of Victoria from this country without restriction, although an equine disease—Glanders, which, we are assured, is unknown in Australia—has been and is now very prevalent in Great Britain. If we are correct, then there surely must be some inconsistency in the notion upon which the prohibitive measures are founded. The same might be said with regard to Rabies and some other maladies of animals other than cattle.

ENZOOTIC VARIOLA AMONG BUFFALOES.

IN the *Gazetta Medico-Veterinaria*, Professors Oreste and Sabbatini mention that the Variola of buñaloes has not hitherto been observed, all the veterinary pathologists being silent with regard to it. Quite recently they had the oppor-

tunity of seeing a considerable number of cases—more than two hundred, young and old, being affected in a large herd. The eruption appeared exclusively on the mammæ of the cows and on the muffle of the sucking calves. At the commencement of the disease, the cowherds noticed a diminution in the secretion of milk, and an inflamed condition of the udder, which rendered milking a very painful operation. There were no erosions on the buccal membrane, nor in the interdigital space, which was quite healthy. Pigs pastured along with the sick buffaloes were not affected, and none of the people who milked the cows had pustules on their hands. When the Professors made their inspection, the exanthema had reached an advanced stage of its evolution, and had lost its typical characteristics in consequence of the daily milking or the suckling of the calves. Some pustules were nearly cicatrised; others were covered with round pale crusts which adhered to the subjacent corium; others, again, were converted into veritable erosions involving much of the substance of the integument. In but one animal was the eruption yet well-defined, and it was only on the muffle of the calves that it presented its really typical characters. With all the calves which came under observation, there were noted two or three pustules varying in size from a pea to that of a threepenny-piece; these were covered by a pale crust, umbilicated in its centre and firmly adherent. In removing these crusts, there was exposed a bleeding surface, or one covered by a whitish-yellow pus.

All the animals attacked—cows and calves—never lost their appetite, nor did they appear otherwise than in good health. A veterinary student was inoculated with some of the matter from the pustule of a calf, but the result is not stated.

Oreste and Sabbatini appear to have come to the conclusion that, besides the Cow-pox, there is also a *Wild-ox-pox*, or Variola of the buffalo, and that in this animal the eruption appears on the udder as in Cow-pox; that the disease is contagious, because it is transmissible from the mother to the calf; and therefore that it is a real Variola.

A NEW GERM PRODUCING A FORM OF ANTHRAX.

TOUSSAINT, of the Toulouse Veterinary School, who has been so successful in his investigations into the causation of Anthrax, has quite recently communicated a Note to the Paris Academy of Sciences, which is of the greatest interest. This Note is entitled "On a Form of Anthrax (*une maladie à forme Charbonneuse*) caused by a new Ærobic Vibrion." The extreme importance of Toussaint's communication, and his study of this *Ærobium*, or *Microbium*, as these particular germs are designated by the newer order of investigators, impel us to offer a full translation of it to our readers. It will be observed that the malady which Toussaint has studied is transmissible not only by inoculation, but also through the digestive organs, and it is very probable that it is also infectious. It is in all likelihood this form of Anthrax which occurs as a widespread disease, and renders the flesh of animals so poisonous to creatures which consume it. Certain it is, that in one form of Anthrax the malady can only be produced experimentally by inoculation, whereas in this form it can be conveyed by inoculation, and by feeding with the diseased flesh, excreta, etc. The recognition of the existence of two forms of the disease—due perhaps to metamorphoses of the germ at a certain period, or to germs of different kinds—will serve to explain the anomalies which are observed in outbreaks of this Protean and wide-spread malady.

Toussaint states as follows:—To the kindness of M. Boutet, of Chartres, I

am indebted for the blood which served for my first experiment. This blood was obtained from a horse which had died rapidly with symptoms of Anthrax Fever. It reached me on the 27th of last March, sixty hours after the death of the horse; and a rabbit was immediately inoculated with it, by two punctures in the ear. The blood did not exhale any putrid odour; it was black, pitchy, and uncoagulated; the corpuscles were perfect, and not in masses—as happens in Anthrax; the serum was slightly rose-tinted, and did not offer any *Bacteridia* or *Vibrions* of putrefaction (my attention at the moment was only directed to the known forms). The condition of the blood allowed me to affirm that it had never contained *Bacteridia*.

The rabbit which was inoculated on the 27th died in twenty-four hours, with symptoms analogous to those presented by Anthrax-affected animals, with the exception of the temperature, which was 38° Cent. (100·4° Fahr.) at death. No *Bacteridia* were found anywhere. A second rabbit immediately inoculated died in between thirteen and fourteen hours; and it was in this second experiment that I recognised the presence of the new *Microbium*. Since that time, fifty-four animals, inoculated for various purposes, have always yielded these organisms, and have likewise offered the greatest uniformity in symptoms and lesions.

The inoculations were made with $\frac{1}{10}$th to half a drop of blood or cultivated fluid. Death usually took place at from the tenth to the fourteenth hour, with a temperature varying from 37° to 39°. At the autopsy, the most striking features were the extreme injection of all the small vessels, which were gorged with black blood, and the intestinal lesions. The small intestine was completely deprived of its epithelium; Peyer's patches were congested, and often presented sanguine suffusion in the follicles, and even commencing ulcerations. The contents of the large intestine were very liquid, and in nearly every case a more or less abundant diarrhœa preceded death. The blood coagulated only very slowly in the vessels, and the clot was soft and but little consistent; the *rigor mortis* was always imperfect, and the muscles had a peculiar pale colour.

Examined microscopically, the blood was observed to be diffluent; the corpuscles formed a continuous layer, and never congregated into piles or clusters; some were discoloured, and the serum was slightly tinted. With a power of from 500 to 800 diameters, there could be perceived a great quantity of extremely small vibrions, in the form of spherical or slightly oval points, and very slightly refrangent—a circumstance which caused them to be distinguished with difficulty in the coloured serum; they were isolated or geminated, and never joined together in chains. Their dimensions did not vary to any marked degree. The only movements they displayed were trifling and slow displacements, which appeared to be quite distinct from the Brownian movements. Very numerous in the blood (5 to 10 for every corpuscle), they were in immense quantity in the lymphatic glands, and swarmed in the œdema at the points of inoculation. They were also found in all the tissues external to the vessels, and in all the fluids of the body—the humours of the eye, serous fluids, urine. When the omentum was examined by a high magnifying power, they could be readily distinguished in the vessels in the form of masses of regular granules, which frequently occupied all the calibre of the capillaries, and were distinctly detached on their optical border.

All the fluids of the body are as readily inoculable as the blood; the aqueous humour, urine and chyme, kill animals in twelve hours.

The malady is not only contagious by direct inoculation, but is equally so by the digestive canal, and perhaps also by the respiratory passages. Three rabbits died in eighteen to twenty-eight hours after eating oats moistened by infected blood. The matters of the intestine, the excrements reduced to powder and mixed with the food, killed two rabbits of six fed only once with

this diet. Two other vigorous rabbits were dead the day after cohabiting, for only one night, with inoculated animals. Lastly, three adult rabbits placed in hutches adjoining those containing the experimental animals, died in the same manner, without coming into direct contact with the inoculated ones.

I am at this time performing some very interesting experiments on the larger animals—dog, sheep, ass, and horse.

I have cultivated the new *Microbium* by Pasteur's method, and under the microscope, in the hot gas chamber introduced by Ranvier ;* by these means I was able to observe their multiplication. In two and a-half hours, a single germ had produced twenty-two. Multiplication takes place by scissiparity as soon as the *Microbium* has attained double its ordinary length. They never form filaments analogous to those of the *Bacteridia;* and they multiply more rapidly at the margin of the covering-glass, where they receive most air, than in the middle of the preparation. Contact with the air, and pure oxygen acting in a damp chamber on a layer of blood $\frac{1}{4}$th of a millimetre in thickness for twenty-four hours, has preserved the potency of the blood. Blood collected in tubes deprived of air and hermetically sealed, lost all its activity in about ten days.

Putrefaction destroys the *Microbium*, though much more slowly than that of Anthrax *Bacteridia.*

Mixed in the culture fluids, the *Bacteridium* and the new *Microbium* develop side by side. Inoculated in animals, care being taken to employ only a very small quantity of the latter, the two entophytes develop simultaneously, and on microscopical examination they are found associated in the blood. But at the second inoculation, the *Bacteridia* are still localised at the point of inoculation, while death has been produced in consequence of the much more active multiplication of the vibrion.

The symptoms presented by the affected animals, and the contagion at a distance (infection), lead me to believe that the entophytic malady which I am now studying is the same as that observed by Leplat and Jaillard, as Anthrax without *Bacteridia*, and studied by Davaine under the designation of the "Cow Disease" (*Maladie de la Vache*).†

DISEASE AMONG DEER IN ENGLAND, AND AMONG DEER AND WILD BOARS IN GERMANY.

Of all the ruminating *feræ naturæ*, the cervine tribe appear to be most liable to attacks of epizoötic diseases of a deadly character, which often sweep off large numbers in a short time, and not infrequently extend over wide tracts of country. In "Animal Plagues" are recorded such outbreaks as they occurred from the earliest periods up to the end of the last century ; and the history of epizoötic and panzoötic maladies in the present century gives very many instances of such visitations among deer in parks and forests in this country, as well as on the Continent. In the second volume of the *Veterinary Journal* (p. 130), we gave an account of a most serious destruction of deer in the imperial hunting district of Potsdam, Prussia, during the summer of 1874. The malady had prevailed in the same locality in 1846,

* This means is extremely convenient for studying all the lower organisms, and especially the Anthrax *Bacteridia*. We can follow from minute to minute their elongation and transformation into spores, as well as the elongation of the spores to form *Bacteridia* again. Lately, I have been able to ascertain that the *Bacteridia* cultivated in certain fluids—especially in the serum of the dog's blood—sometimes give rise to real globular sporanges or to gourds filled with spores.

† See *Comptes Rendus*, vol. lxi., 1865, pp. 298, 301, 334, 368, 436, 523, 526. (See also the *Veterinary Journal* for last August, p. 117 : "Epizoöty among Animals in Sicily.")

and again in 1861 and 1873; but the losses in these years were insignificant when compared with those reported in 1874; when, of 1800 deer in one park, no fewer than 1219 died—being 69 per cent. of the cervine population; while in the entire district 1780 perished of 2729—or 65 per cent. The malady was investigated by the Berlin veterinarians, and found to be "Milzbrand," Splenic or Anthrax Fever.

In this country lately, outbreaks have been far from uncommon, and the deer herds in some parks have suffered more or less severely; while the malady which occasioned the mortality has been looked upon as something mysterious: being at one time attributed to the bites of rabid dogs, to an over-luxuriant growth of grass, to "something in the air," or other causes which convenience may invent, but which science cannot accept as satisfactory, as they will not account for the course or pathology of the disease. Some months ago the carcase of a diseased deer was sent to us for examination, and the macroscopical inspection made by Professor Duguid at the Brown Institution left little doubt that the disease was Anthrax Fever. No *Bacilli anthracis* could be discovered in the blood or other fluids, however; and their absence—though it might be accounted for—left a doubt as to the exact nature of the disease. Quite recently, Professor Duguid has settled the question by successfully inoculating guineapigs and rabbits with the blood of affected deer, and finding swarms of the characteristic *Bacilli*.

This instance once more illustrates the advantages to be derived from modern scientific modes of investigation; as, if they are not made available, attempts to solve questions in pathology are little better than time and opportunity thrown away.

In July last no fewer than 180 deer, as well as a number of wild boars, were found dead or dying in the Munich parks; but the nature of the disease does not appear to have been ascertained, though it was surmised that it was not Anthrax, but a disease that usually terminated in Apoplexy.

The latest intelligence with regard to this outbreak in Germany is as follows:—"A mysterious form of disease has broken out among the herds of wild deer in the preserves on the right and left banks of the Isar, and the districts of Ebersberg, Dachau, and Bruck, in Bavaria. In the Forstenried, Auzing, and Grünwald Park alone upwards of 350 head have already fallen victims. The disease has also appeared to some extent sporadically among domesticated cattle in various parts of the country, and in these cases it was noticed that the best fed animals of the herd were invariably the first attacked. Under these circumstances the Government hastily summoned by telegraph a commission of experts, including lawyers, veterinary surgeons, and foresters, to investigate and consult upon the subject, and to draw up such regulations as they might deem advisable to prevent the spread of the disease. The commission have reported that the disease, as it occurs in Grünwald and Auzing, is more dangerous and highly infectious, and that it bears a strong resemblance to Anthrax, with which, however, it cannot properly be identified."

A POISONOUS CONFERVA IN AN AUSTRALIAN LAKE.

MR. GEORGE FRANCIS, of Adelaide, South Australia, sends to *Nature*, in February last, the following interesting account of a poisonous Conferva in one of the lakes of the River Murray:—

"This year the lakes forming the estuary of the Murray have been very low, and the water unusually warm. The river is very low, and the inflow to the lakes very slight and having a temperature of 74° F. Lake Alexandrina—on calm days surface 76°, depth 73°—during breezy temperature is 72°. A

Conferva that is indigenous and confined to the lakes has been produced in excessive quantities,—so much so as to render the water unwholesome.

"It is, I believe, *Nodularia spumigera*, allied to protococcus. Being very light, it floats on the water except during breezes, when it becomes diffused. Thus floating, it is wafted to the lee shores, and forming a thick scum like green oil paint, some two to six inches thick, and as thick and pasty as porridge, it is swallowed by cattle when drinking, especially such as suck their drink at the surface like horses. This acts poisonously, and rapidly causes death: symptoms—stupor and unconsciousness, falling and remaining quiet, as if asleep, unless touched, when convulsions come on, with head and neck drawn back by rigid spasm, which subsides before death. Time—sheep, from one to six or eight hours; horses, eight to twenty-four hours; dogs, four to five hours; pigs, three or four hours.

A *post-mortem* was made on a sheep that had thirty ounces of fresh scum administered by the mouth: death was long coming on—about fifteen hours; examination made six hours after. Stomachs: none of the green scum left, all absorbed; dry grass found in stomachs. Abdominal cavity contained two pints of yellow serum; heart flaccid, but not pale; great effusion of serum around it. Lungs, liver, kidneys, and substance of brain healthy and normal, but the dura mater congested. Blood throughout veins and arteries and in both ventricles black and uncoagulable, neither did it become scarlet on exposure to the air. Many sheep that died, on being opened, presented the same appearances, all being without any sign of its presence in the stomachs.

This shows that the plant is rapidly absorbed into the circulation, where it must act as a ferment and cause disorganisation. The cattle will not touch the puddles where the scum has collected and gone putrid. Thus all they take is quite fresh, and the poisoning is not caused by drinking a putrescent fluid full of bacteria, as at first supposed. When this scum collects on the banks and is rapidly left dry, it forms crusts of a green colour. This has gone out of the Murray mouth into the ocean and been wafted ashore, forming thick beds of green stuff from a few inches to twelve inches thick. When, however, this scum is left in wet pools and puddles it rapidly decomposes, giving off a most horrid stench like putrid urine, or archil in process of manufacture; but previous to its getting into that state it emits the smell of butyric acid, smelling like very rancid butter.

There exudes from this decomposing matter a blue pigment which has remarkable properties. Sample tube 1 contains the fluid as strained off from the scum, and will be found full of bacteria. No. 2 is the same with glycerine, and filtered to separate the bacteria.

This fluid is remarkably red, fluorescent by reflected light, being blue by transmitted light. Spectrum, a broad and deep band total at top in the red, but shading off to green, quite cutting off orange and yellow.

Chemical properties: -Heat destroys colour; sulphuric acid no action; nitric acid reddens; hydrochloric acid, the alkalies, and ammonia, destroy colour; chlorine and ozone bleach; light but little action, yet sunlight gradually bleaches; dries to a mass, retaining colour; soluble in water, glycerine, and weak alcohol. I think this is allied to the colouring matter of some lichens, is a product of decomposition, and not pre-existing in fresh plants. Its fluorescent powers are remarkable, and the most powerful I have ever met with.

THE NATURE OF ANTHRAX.

INVESTIGATIONS into the nature of Anthrax are being still carried on with undiminished zeal, and with most interesting rseults. No malady has ever

XUM

received more attention, so far as its etiology is concerned, than this; and the eagerness with which its study is pursued is to be attributed to the fact that the minute vegetable organisms which, there is every reason to believe, produce the disease, can be isolated and cultivated, and their life-history traced with comparative ease by the microscopist. For a long time we have devoted much of our space to the most important of these investigations; and it is our intention to continue our observations upon those published from time to time, as the discoveries made in this direction may give us a clue to the cause of other diseases quite as serious as this one, and indicate more or less clearly the best measures for their prevention or cure.

The *Recueil de Méd. Vétérinaire* for April contains a lengthy notice of the most recent additions to our knowledge of Anthrax, and a summary of the latest experiments of Pasteur and Toussaint, which, in their results, form a new point of departure, and are extremely interesting to the biologist and pathologist.

The researches of Pasteur have conclusively shown that the presence of the *Bacteridia*—or *Bacilli anthracis*, as they are now designated—is a necessary condition for the development of Anthrax: in other words, the disease is due to the multiplication of the *Bacilli* in the organism of the infected animal; and it is this multiplication, and the modifications that it engenders, which are the condition of the indeterminate alteration in the blood, which what is called by the French the "medicine of observation" has signalised as the most characteristic objective feature in the disease.

Colin, of the Alfort Veterinary School, has certainly drawn opposite conclusions from his experiments—relying solely upon the microscope for evidence, and declining to resort to the methods of investigation pursued by Pasteur, who asserts that a micrographic inspection alone is insufficient to prove the "Bacteridian" nature of a fluid, that the "sowing" proof is necessary, that the *Bacteridia* which may not be visible in the field of the microscope will certainly betray their presence by their fructification in a fluid suitable for the manifestation of their activity, and which is inoculated with them. The *Bacillus* being an organism—which implies that it can only arise from an identical organism, as spontaneous generation has not yet been demonstrated– Pasteur assumes the right to infer with certainty as to the multiplication of *Bacilli* in the medium into which the drop of infected fluid was introduced, and which must have contained these organisms, though the microscope could not find them. Colin strangely imagines that the *Bacilli* are simple transformations of blood corpuscles or granules, and has, deservedly we think, brought upon himself a considerable amount of disfavour. Pasteur with justice declares, that to produce *Bacilli* in a fluid suitable to their nutrition, they must first be introduced by some means or other, and so long as their introduction is prevented, none will ever be seen in that fluid. There is never observed in the closed cavities of living bodies, nor yet in the sealed vessels in laboratories, the spontaneous transformation of blood-corpuscles or the granules of leucocytes into *Bacilli*.

At the Academy of Medicine, in March, Pasteur brought forward a most startling communication. It has long been known that birds are refractory to Anthrax inoculation, and the reason for this has puzzled many minds; but it was surmised by some authorities that the high temperature of these creatures prevented the multiplication of *Bacilli* in their blood. This was, of course, a mere conjecture, and could have no value had experimentation not proved its correctness. At the meeting in question, Pasteur deposited on the *bureau* of the Academy three fowls: one dead after twenty-nine hours' Anthrax inoculation—five drops of fluid, which had been "sown" with perfectly pure *Bacilli*, having been employed; the fluids of the bird were found to be full of the organisms. In a cage were the other two fowls—a

black and a grey-coloured. The black one was inoculated at the same time and with the same fluid as the one that died—but with this difference, that the quantity of fluid was twice as much, in order to render the comparative results more certain. This bird was nevertheless in perfect health. The grey fowl was not inoculated at all, and was, of course, quite well.

Pasteur then alluded to the idea which entered his mind during a previous discussion at the Academy, that the immunity of birds from Anthrax was probably due to the temperature of their bodies, which is several degrees higher than that of the animals usually decimated by the disease. Therefore, inoculating the first fowl, it was immediately placed in a cold bath—the lower third of its body being only immersed, in order to reduce its temperature a few degrees. It died next day, and its blood, spleen, lungs and liver were full of *Bacilli*, capable of subsequent cultivation either in inert fluids or the bodies of animals. The grey fowl had been placed in a bath at the same temperature and for the same time as the one which died. There could be no doubt, therefore, that the death of the latter was due to the inoculation,—the *Bacilli* found throughout its body were otherwise proof of this. Pasteur remarked that the idea must have struck all the members of the Academy, that a counter proof of the correctness of this discovery would be furnished by so raising the temperature of the body of an animal which had been inoculated, that the development of the microscopic organisms would be hindered and the creature's life preserved. Experiments in this direction were then being carried out in his laboratory. Davaine had already, in 1873, made some observations of this kind ; but he limited himself to finding out the lowest temperature which would destroy the Anthrax virus. Having discovered it to be equal to 51° Cent. (123·8° Fahr.), he could not hope for complete success, the labours of Claude Bernard showing that mammals die when their blood acquires a temperature of 45° Cent. (311° Fahr.)

Pasteur states, however, that it is not so much the determination of the temperature which will destroy the virus, as the ascertaining of that which will prevent the development of adult *Bacilli* in process of reproduction by scissiparity. He has satisfied himself that the temperature at which they cannot develop in inert fluids, and *à fortiori* in the living body—because the influence of vitality must be taken into consideration—is less than 44° Cent. It is therefore probable that the limits accessible to therapeutic measures may be attained.

Bouley incidentally remarks that this communication of Pasteur's appears to have a great importance in general pathology. The term "receptivity," so frequently employed, expresses no more, in the majority of cases, than an indeterminate state of the organism, by virtue of which pathogenic agents act upon it in some way or another. The reason for this aptitude nearly always remains unknown ; as little is known of it as of the conditions which confer immunity on organisms that remain refractory to the action of morbific causes for which other organisms have the "receptivity." The experiments of Pasteur afford the first example, we believe, of the rigorous determination of the condition necessary for the receptivity of a virulent agent. His demonstration has all the precision of an experiment performed in a laboratory of physics or chemistry. Thefowl is refractory to the Anthrax virus ; the creature is submitted to a certain amount of refrigeration, and the receptivity which it did not before exhibit is now acquired. Anthrax, which had no power over it so long as it retained its normal heat, found it no longer invulnerable once its temperature was diminished a few degrees. How was this ? Because the condition through which the fowl resisted the Anthrax virus was simply its normal temperature, which was unfavourable to the active manifestations of the *Bacilli*. Pasteur has therefore proved that in a given condition, artificially brought about, the experimenter has it in his

XUM

power to render the action of a virus potent in an organism which is refractory to it in its physiological conditions.

Almost at the same time that Pasteur was announcing the result of his researches, Colin detailed that of his Anthrax inoculation of young birds—sparrows—taken from the nest, but replaced under the mother immediately after inoculation: every one of these birds died; and the question then arose as to their receptivity for the virus. Pasteur's experiment on the fowl answers the question: the young birds had less animal heat than adults, and were therefore in a condition which rendered them apt to receive a virus against which their calorific faculty would have protected them when completely developed. This opinion received the assent of Milne-Edwards and Dumas. The latter remarked that if it had been desired, still adhering to physiological conditions, to verify the correctness of Pasteur's views on the influence of refrigeration as an agent in Anthrax receptivity, the experiment that one would suggest is exactly that of Colin—that is, an experiment on young birds whose normal temperature is not so high as that of adult birds.

Another question with regard to this malady is the part which the *Bacilli* play in the manifestation of the phenomena which characterise Anthrax infection. Do they act as "asphyxiants," through their avidity for oxygen being greater than that of the red corpuscles of the blood, as Pasteur is inclined to admit? or do they produce other effects—acting mechanically and as special irritants? Toussaint, of the Toulouse Veterinary School, has applied himself to the study of this complex question, and he has thrown considerable light on it by very ingenious and well-conducted experiments, which are demonstrative of the *exclusively parasitic* nature of Anthrax. We have already given his first series of observations in this *Journal;* he made another communication to the Paris Academy of Sciences in March, under the title of "Proofs of the Parasitic Nature of Anthrax: Identity of the Lesions in the Rabbit, Guineapig, and Sheep." In this paper he says:—

"In the communication I had the honour of laying before the Academy on the 3rd of December last, I explained the mechanism of death consecutive to Anthrax inoculation in the rabbit. This creature died in consequence of the obliteration of the capillaries of essential organs—such as the brain and lungs. The majority of the flexuous capillaries of the economy were full of *Bacilli* when death occurred, and I have noted the choroid and the retina of albino rabbits as being points where these obliterations can be most readily observed. In the first line should be equally placed the plexus choroides of the lateral ventricles, and the blood capillaries of the lymphatic glands and connective tissue. Notwithstanding the proofs of the parasitic nature of Anthrax, and those which have been furnished by Koch and Pasteur, some experimenters still believe in the existence of an Anthrax virus. This is why I think it useful to call attention to the following experiments, which appear to me to yield irrefutable arguments in favour of the parasitic doctrine:—

"1. I have demonstrated that, when fresh Anthrax blood is collected in tubes where it is preserved from the atmosphere and putrefaction, it loses its contagious properties in seven or eight days—earlier, even, if kept at a temperature of from 38° to 40° Cent. Viruses do not usually comport themselves in this way; in fact, this means is generally adopted to preserve them.

"2. The filtration of fresh and defibrinated Anthrax blood—filtered through eight layers of paper—suffices to free it from contagiferous elements; the filter allowing the granules, and even some white corpuscles to pass, but retaining all the *Bacilli*. This method is preferable to plaster filtration, which only permits the substances dissolved in the serum to pass through, but none of the visible elements. Chauveau had already demonstrated that the contagious properties appertain exclusively to the visible particles of virulent humours. In the experiments of my learned master, filtration

executed in the fashion I have employed for Anthrax allows a good portion of the virulent elements to pass; applied to Anthrax blood, however, it completely deprives it of its contagious properties.

"3. In the case of injection, or, if we desire it, of direct transfusion from vessel to vessel, made from one animal to another of the same species, we may at will diminish the interval which transpires between the moment of injection and that of death, and so suppress the pretended period of incubation, as the following experiments will testify.

"I injected, by means of the Pravaz syringe, into the jugular of three rabbits placed in the same conditions, equal quantities of pure fluid blood (1 centimetre cube $\frac{1}{2}$:) extracted immediately from the jugular of an animal in the last stage of Anthrax; the blood was so diluted with distilled water, that the different fluids corresponded respectively to 1500 millions, 75 millions, and 1500 *Bacilli*. The first animal died in seven hours, the second in twelve to thirteen hours, and the third in thirty-six hours. But every one knows that, when virus is in question, the quantity is of little account; if the duration of incubation varies, it is from other causes than the proportion of virus introduced.

"4. In the two following experiments, the facts are still more conclusive. A rabbit inoculated twenty-eight hours previously with cultivated *Bacilli*, was on the point of dying; the *Bacilli* examined in the blood of the jugular were at least in the proportion of one to two blood-corpuscles—or about 2,500,000 to the cubic millimetre.

"*A*. A rabbit of three months, weighing 515 grammes; temperature 41·5°. At 4.25 p.m. injection into the jugular of two cubic centimetres of blood, equal to five thousand millions of *Bacilli*. At 4.55, examination of the blood from a vein of the ear: five or six *Bacilli* in the field of the microscope (objective 7 of Verick). At 5.30, eight to ten *Bacilli* in the field. At 6.10, twelve to fourteen *Bacilli;* temperature 39·6°. At 7.40, 150 *Bacilli;* temperature 37·3°, very profound coma, blood-corpuscles agglutinated. Examination of the jugular blood discovers 700 to 800 *Bacilli* in the field. (They are always much less numerous in the vessels of the ear, where the circulation speedily diminishes.) The rabbit is more and more ill; after some general convulsions, it died at 7.50—that is, three hours and twenty-five minutes after the injection.

"*B*. Rabbit of the same litter; stronger; weight 820 grammes; temperature 41·3° Cent. At 4.45 p.m., injection of one cubic centimetre of blood directly into the right ventricle by means of a Pravaz syringe, supposed to contain two thousand millions of *Bacilli*. At 5 o'clock, examination of blood from the ear: one or two *Bacilli* in the field of the microscope. At 5.35 and 6.20 the proportion of *Bacilli* remains the same in the vein of the ear. At 8 o'clock, a small artery in the ear cut across; thirteen or fourteen *Bacilli* in the field; coma commencing; temperature 39·3°. At 8.30, twenty *Bacilli* in the field; deep coma; blood-corpuscles agglutinated. At 9 o'clock, fifty *Bacilli;* temperature 36·5°, and the thermometer visibly falling; coma so profound that pricking the cornea scarcely produces winking. At least 1000 *Bacilli* were counted in the field: blood drawn from the jugular. At 9.15 the animal died; temperature 35·8°. Death took place in four hours and twenty-five minutes.

"In these two cases, the autopsy demonstrated the existence of embolism in the entire capillary system. The emboli were so numerous in the lungs as entirely to conceal the structure of these organs.

"The five experiments above reported clearly demonstrate that death is due to the multiplication of the *Bacilli*. We may, in taking into account the number injected, the duration of the disease, the mass of blood in the animals, and the approximate number of *Bacilli* present when death occurred,

arrive at the conclusion that the multiplication of the parasites takes place in geometrical progression, which begins immediately after their introduction into the vascular system. The interval separating each period of progression is here about forty minutes. It is equally undeniable that this multiplication occurs in the bloodvessels, and that there can be no question as to incubation, however brief that term may be. The presence of the parasite, as we follow the experiments step by step, excludes all idea of a virus.

"I have verified on other animals the results obtained in the rabbit. It is scarcely necessary to remark, that with the guineapig everything goes on in the same way.

"In the sheep we meet with identical lesions; the obliteration of the capillaries is perhaps still more complete, and especially in the intestinal villi and the grey substance of the nerve centres. Everything said about the rabbit is perfectly applicable to this species, except that the multiplication of the parasite takes place more completely and rapidly.

"In a certain number of experiments on the ass and horse, I have obtained identical results to those observed in the sheep and rabbit, and others which differ in a particular manner.

"Dogs may also be killed by the intravenous injection of a very minimum quantity of fresh Anthrax blood. The lesions found at the autopsies have a great resemblance to those met with in certain equines. To me they appear to be due, partly to the existence of an eminently phlogogenous matter which accompanies the *Bacilli*, and the effects of which will be alluded to in a future note." *

THE HORSE'S URINE.

(*Zeitschrift. Recueil de Méd. Vétérinaire.*)

FESER AND FRIEDBERGER, professors at the Munich Veterinary School, have published some observations on the crystalline sediment found in the horse's urine. Observing that, on emission, the urine of this animal is already somewhat turbid, they point out that after a short time it deposits a yellowish granular sediment, composed of neutral calcium carbonate, with a little magnesium carbonate. After filtration of the normal urine, a transparent yellow or brownish liquid is obtained, which, after rest, and particularly after a little heating, also yields earthy carbonates. This sediment is pulverulent, and is found to be freely crystalline, when examined by means of the microscope. The crystals are in the form of small spheres made up of continuous layers, and showing radiating striæ. The deposit is dissolved with effervescence, when it is treated with a concentrated acid. The turbid urine of the horse is rendered clear and transparent by the addition of an acid. It is only in urine very rich in hippuric acid that, after a somewhat lengthened rest, there is deposited a new sediment of that acid, which is recognisable by its needle-like crystalline structure, and when thrown on live charcoal gives off an odour resembling that of benzoic acid or the essence of bitter almonds.

There is often found mixed with the normal sediment calcium oxalate, which is known by its octohedral crystals, derived from a cubical type, and its insolubility even in an excess of acetic acid. These crystals are deposited

* See the Original Communication from Professor Toussaint in last month's issue of the *Journal*.

merely by rest, but their deposition is hastened if an excess of alcohol or acetic acid be added.

The oxalate of lime had also been found by Feser and Friedberger in the urine of the horse, in the form of small globes or tubercles, and particularly as sand.

The presence of too great a quantity of calcium oxalate in the horse's urine always indicates a disturbance in the functions of oxidation in the economy; and this is one reason why it is most abundantly met with when the respiration is abnormal.

The two authors, in the case of a particular horse, found calcium sulphate. The urine, which was clear and transparent when passed, became turbid in the course of a few hours, and yielded a yellow sediment, greatly crystalline. The fluid itself had an acid reaction, and the horse had suffered from Colic some time previously.

In another horse affected with Bronchitis, the sediment which was formed in the same circumstances as in the other case, and likewise in an acid urine, was found to be composed of uric acid, recognisable by its needle-shaped crystals grouped in bundles. Uric acid is always present in the urine of the horse, but usually in such small quantity that it is not deposited; it is necessary to add hydrochloric acid to the urine in order to produce this deposit in about twenty-four hours. In severe fevers, however, it becomes abundant; in animals suffering from inanition, and in all cases in which they are feeding or existing upon their own tissues—when, in fact, the herbivora become carnivora—it is largely increased.

In a later number of the same journal, Feser and Friedberger endeavour to explain the presence of a sediment of sulphate of lime in the urine of the horse, and they claim to be the first who have noticed this deposit: the sulphate of lime not being a normal constituent of the urine. Their researches have been more particularly made on horses in good condition, to which they had given somewhat large and prolonged doses of sulphates—sodium sulphate, magnesium sulphate, hyposulphite of soda, and dilute sulphuric acid. These were administered for several days, but there was never found in the urine of these horses the faintest trace of calcium sulphate, although the sulphates were all evidently eliminated by the urinary apparatus: a fact which was demonstrated by treating the urine with alcohol, which precipitated the sulphates.

A horse which had received 100 grammes of potassium sulphate, 200 grammes sodium sulphate, and 200 grammes hyposulphite of soda, gave, by the action of alcohol, in a litre of urine, a deposit composed of 10·28 grammes of sulphates the first day, 15·50 grammes the second, and 19 grammes on the third; while the normal urine only yielded at most from three to four grammes. With the horses experimented upon, the urine remained alkaline, and only gave calcium carbonate, with a little oxalate, as a sediment; the urine, when filtered and heated, also yielded a precipitate of calcium carbonate; but when it was attempted to dissolve this sediment by acetic acid, carbonic acid was disengaged, the fluid remaining turbid; a new precipitate was formed, which additional acetic acid increased in quantity. This new sediment appeared to be composed of minute monoclinic crystals, which were recognised to be those of sulphate of lime. This insoluble salt evidently did not exist primarily in the urine, but was formed by the reaction set up in urine rich in soluble phosphates: it was the acid added to this fluid which had decomposed the earthy carbonates, and transformed them into acetates; in the presence of the alkaline sulphates there then occurred a double decomposition and precipitation of the calcium sulphate.

In this way it is explained why the urine of the horse will yield a deposit of calcium sulphate only when it has ceased to be alkaline, and when there is

developed in the economy an acid which the urine carries of in large quantity—as, for instance, lactic acid. The conditions under which the horse's urine assumes this acid quality have still to be discovered, and then it will be necessary to discover if a sediment of calcium sulphate is formed spontaneously.

THE PREVENTION AND CURE OF SWINE PLAGUE.

THE extremely fatal and destructive pig disease, sometimes designated Typhoid in this country—though, pathologically, it is quite distinct from human Typhoid—and, as erroneously, Hog Cholera and Intestinal Fever in America, has been attracting much attention in the latter country. At the request of the Commissioner of Agriculture, our *confrère*, Professor Law, of the Cornell University, has prepared an exhaustive paper on the malady—and particularly with regard to its prevention and treatment. A condensed notice of this paper has recently appeared in our contemporary the *American Live Stock Journal*, which, from the importance of the subject, we reproduce.

"In a fatal contagious disease like that under consideration, it is rarely good policy to subject it to treatment. The enormous increase of the poison in the bodies of the sick, and the extreme danger of its diffusion through the air, as well as on the feet of men and animals, render the preservation of the victims eminently unsafe and unprofitable. Yet in the case of very valuable animals, and where seclusion, disinfection, and careful nursing can be secured, it may be resorted to.

"A dry, airy, well-littered building may be provided, abundantly sprinkled with a solution of carbolic acid or chloride of lime. Rugs steeped in a solution of one or other of these agents may be hung up at intervals, and sulphurous acid set free by burning a pinch or two of sulphur three or four times a day. The dung should be saturated or thickly sprinkled with finely-powdered copperas. Any drains will require disinfection in the same way. If the sick animals are kept in the open air, the ground must be freely sprinkled with disinfectants—above all where the dung has been deposited.

"The diet should be well-boiled gruel, of barley, rye, or Graham flour; or, if fever runs high, and the temperature is raised by such food, corn-starch, made with boiling water or milk, may be substituted. Fresh, cool water should be freely supplied, either pure or slightly acidulated with sulphuric acid.

"A successful system of prevention can only be instituted when we duly appreciate the fact that almost all cases of this Intestinal Fever are due to contagion. And this is precisely what our hog-breeders fail to realise. No man in his senses will affect to deny that the disease is contagious, but the natural tendency is to seek for other causes in the great majority of cases. As in the case of all contagious affections that have attained a wide prevalence, this presents a number of outbreaks which cannot be traced to contagion from any diseased stock, and these are at once assumed to be spontaneous, and the cause of the disease is sought in the peculiar treatment of the herd, and further prevention is attempted by the avoidance of these peculiarities.

"It must be fully recognised that neither contact nor proximity is necessary to contagion. The poison may be carried a certain distance on a stream of water without losing its vitality. It may be blown a long way by a favourable wind, when dried up, on light objects. It may be carried on the boots, hands, etc., of men (dealers) passing from farm to farm, and from district to

district. Horses, cattle, sheep, dogs, fowls, pigeons, and wild animals of all kinds, are liable to carry the virus on their feet and limbs, and to deal out death to the pigs at places widely separated from each other. It is, therefore, quite impossible to trace all new outbreaks to contagion. But to attribute them to spontaneous evolution of the disease is to beg the whole question. It can be freely conceded that a certain number of cases probably originate spontaneously every year; but these are few and far between as compared with the enormous mortality caused by contagion. It can be equally conceded that certain seasons are far more favourable to the propagation and virulence of the disease than others; yet even in these the great majority of cases are infectious. It can be admitted even that a wholesome laxative diet is to some extent protective, as well as comfortable dwellings, and antiseptic agents, like copperas, bisulphite of soda, charcoal, or carbolic acid. But all such protectives are comparatively limited in their operation, and, though they seem to have saved a few isolated herds, will fail disastrously if generally relied on. The epizoötic influence, too, though apparently all-powerful in localities where the poison has already penetrated, fails to produce the disease in the neighbouring States not previously infected. We cannot give too much attention to secure the best sanitary conditions of life for the hogs, but if we allow a few of these so to engross our attention that our eyes are blinded to the most important of all—the prevention of contagion—we shall only spread the poison and increase the destruction of our herds. On the other hand, the highest success must attend such measures as will stop the production of the poison, and destroy and render innocuous what is already in existence.

"Diseased pigs must be removed from the healthy, and killed and buried. A thorough disinfection of all buildings, yards, and manure must be made. Chloride of lime or zinc, sulphate of iron, or carbolic acid may be used for all solids—floors, troughs, walls, etc.—and for drains; and sulphurous acid or chlorine for the atmosphere. The sulphurous acid may be produced by burning sulphur, and the chlorine by adding oil of vitriol to common salt and a little black oxide of manganese. The surviving pigs must be carefully watched for the first signs of illness. Any unusual sluggishness, stiffness or inappetence, or any disposition to leave the herd, demands a careful examination; and if there is heat or shivering, and, above all, if the thermometer introduced into the rectum indicates a temperature above 103° Fahrenheit, the animal should be at once separated from the herd, and destroyed as soon as unequivocal symptoms of the malady are shown. Care should be taken to avoid the possibility of contamination by water which has passed infected hog-pens or fields. If the malady exists within a wide radius, the visits of dealers and others must be absolutely forbidden; and a similar prohibition should attach, as far as possible, to quadrupeds and birds, wild and tame.

"Disinfectants may even be given to the sound animals that have been exposed to contagion. A tablespoonful of charcoal—animal or vegetable—may be given daily to each pig, in the food. Twenty grains of bisulphite of soda, or ten drops of carbolic acid, or ten grains of sulphate of iron, may be used instead; and a teaspoonful each of sulphur and gentian may be added with advantage. When a herd has been freed from the disease, a most exhaustive disinfection of the whole premises, manure and other products, is imperative; and it is usually desirable to change the site of the hog-pen and run, to obviate any future effects of this most virulent contagion. Old and rotten woodwork should be burned.

"In purchasing pigs, buyers will consult their interests by avoiding markets, and going rather to the breeders whose stock is known to be healthy, and by seeing personally to the thorough cleansing and disinfection of loading banks, cars, boats, etc., which they must use in bringing them home. And, after

all such precautions, newly-purchased swine should invariably be placed in quarantine, at a safe distance from other hogs, and kept there for three weeks, with separate attendants, until they have been proved sound.

"As in the case of other fatal contagions, this could doubtless be kept in check, or even completely extinguished, by a uniform system of destruction of the infected, and disinfection of their carcases and all with which they have come in contact. Such a proceeding would imply an amount of governmental supervision and pecuniary outlay that would be profitable in the long run, though the past experiences of the American people have scarcely prepared them to sanction it."

Abstract of the Proceedings of the Royal College of Veterinary Surgeons, Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

A SPECIAL meeting of Council was held July 22nd, 1878. Present—Messrs. Batt, Broad, Collins, Cox, Moon, Withers, and the Secretary.

On the motion of Mr. BROAD, seconded by Mr. BATT, S. H. Withers, Esq., Vice-president, took the chair.

The minutes of the preceding meetings were read and confirmed.

Letters were read from several members of Council regretting their inability to attend the meeting. Also letters from Professor Duguid and Mr. Harpley acknowledging their election as Examiners for the Fellowship Degree.

On the motion of Mr. COLLINS, seconded by Mr. DRAY, the amended "Bye-law No. 50," as adopted at a special meeting of Council held July 11th, was duly signed and sealed in accordance with the provisions of the Charter.

GLASGOW VETERINARY COLLEGE.

THE summer session of this institution terminated on July 19th, and on the 22nd the examinations for the diploma of the Royal College of Veterinary Surgeons were conducted within the museum of the College. The Board of Examiners included the following gentlemen: Professor Alex. Crum Brown, University, Edinburgh; Professor Alex. Dickson, M.D., University, Glasgow; Dr. Dunsmure, Edinburgh. The following gentlemen were also present as *ex-officio* members: Principal M'Call, F.R.C.V.S.; Professors Knox, M.A., M.B.; D. M'Gill, M.R.C.V.S.; Stephen Cooke, F.C.S.; and James Macqueen, M.R.C.V.S., Glasgow Veterinary College. Twenty-three students presented themselves for the first professional examination, and of this number twenty-one were successful in passing it in a highly creditable manner. Medals granted by the Highland and Agricultural Society of Scotland, and certificates of merit bestowed by the College, were awarded in the different branches of study as follows:—

Materia Medica, Therapeutics, and Pharmacy—Medallist, Mr. Harry Mountney, Hill Somersal, Derbyshire; 1st class certificates, Mr. James Wyper, Glasgow; Mr. Robert Glass, Glasgow; 2nd class, Mr. John Smith, Ulverstone, Lancashire; and Mr. Hugh Bradley, Newry, County Down, Ireland. Chemistry—Medallist, Mr. James Wyper, Glasgow; 1st class certificates, Mr. William Stevenson, Howood, Renfrewshire; Mr. Thomas Bowie,

Kilbarchan, Renfrewshire; Mr. Thomas Douglas, Fenwick, Ayrshire; 2nd class, Mr. Hugh Bradley; Mr. Allan Pollock Blue, Mearns, Renfrewshire. Botany—Medallist, Mr. A. P. Blue; 1st class certificates, Mr. Thomas Douglas and Mr. William Stevenson; 2nd class, Mr. Thomas Bowie, and Mr. William Stewart, Glasgow.

Immediately after the examination the students assembled in the lecture room, under the presidency of Principal M'Call, when Mr. Glass, in a graceful and appropriate speech on behalf of his fellow-students, presented Professor Macqueen with a case of valuable professional instruments as a mark of their appreciation of his ability and merit as Lecturer on Materia Medica.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Blackfriars Hotel on Friday, July 19th, Mr. Tedbar Hopkin, F.R.C.V.S., in the chair. The following gentlemen were present: Prof. W. Walley, Royal Veterinary College (Dick's), Edinburgh; Messrs. P. Taylor, W. A. Taylor, A. Lawson, M. J. Roberts, E. Faulkner, and Killick, of Manchester; Messrs. G. Morgan, R. Reynolds, and E. Hutcheon, of Liverpool; W. Cartwright, Whitchurch; Bromley, Lancaster; W. Dacre, Altrincham; A. Darwell, Northwich; Marshall, Knutsford; Burnel, Oldham; H. Bean, Macclesfield; J. B. Taylor, Ashton; Fergusson, Warrington; W. Whittle, Worsley; and the Secretary.

Letters of excuse were read from Prof. Pritchard, G. Heyes, Jos. Hart, Tom Taylor, M. E. Naylor, John Kenny, A. B. Weir, and C. Elam.

The SECRETARY proposed Mr. B. Wood as a member of this Association; the nomination was seconded by Mr. M. J. ROBERTS, and was carried.

Mr. P. TAYLOR, in bringing forward his motion (viz. that the subscription be raised from 10s. to £1), said that he did not wish to press it: what he required was to get the feeling of the meeting. Such being the case, he would allow it to stand over until the next meeting; but he would propose that the President do advertise in the papers for a reporter to attend these meetings, as he was sure much valuable information was lost in consequence of not having a shorthand writer. This was seconded by Mr. W. A. TAYLOR, and carried.

The "Fleming Testimonial Fund" Committee gave in their report, which was in every way satisfactory. Mr. A. LAWSON proposed, and Mr. W. A. TAYLOR seconded, that the Committee continue their exertions until the next quarterly meeting, and the Secretary be instructed to ask the Secretary of the Central Association what course is intended to be adopted with regard to their subscriptions.

Mr. E. FAULKNER then read the following report of the Electioneering Committee of the Lancashire Veterinary Medical Association for July 19th, 1878: "Your Committee appointed at the last quarterly meeting to act conjointly with the committees of the Yorkshire, Liverpool, and Midland Counties Associations, in order to secure the election of the representatives of the four Societies to the Council Board of the Royal College of Veterinary Surgeons, have to report with exceeding regret that, so far as the election of the representative of the Lancashire Society was concerned, the result was a failure. At a committee meeting held April 12th it was decided to ask Mr. Peter Taylor to nominate Mr. Whittle. Mr. Taylor wrote a letter nominating that gentleman on the following day, April 13th. On the 18th April, Mr. Taylor received a letter from the Secretary of the Royal College of Veterinary Surgeons, dated the 17th, to the effect that his nomination of Mr. Whittle

had arrived too late for acceptance, as the notice had expired on the previous Monday. Mr. Taylor telegraphed to Mr. Coates his protest against the non-acceptance of the nomination, as the letter was posted in Manchester at a quarter to eight on Saturday evening, the 13th April, in sufficient time to reach London by Monday morning's post. Your Committee deem it unnecessary to enter here into full particulars of the proceedings they thought fit to take in their endeavours to obtain the acceptance of the nomination. They sent full proof of the postage of the letter to the legal adviser of the Royal College of Veterinary Surgeons, but unfortunately that gentleman's decision was adverse to the desire of the Committee, inasmuch as he stated that proof of delivery of the letter at the office of the Royal College of Veterinary Surgeons before the expiration of the notice was not proved, and consequently the nomination was not valid. Your Committee beg respectfully to record their great regret to Mr. Whittle, and trust that he will on another occasion allow himself to be placed in nomination."

Prof. WALLEY then read an able, interesting, and exhaustive paper on "Tubercle," at the commencement of which he referred to a former essay of his, read at one of the meetings of the West of Scotland Association.

After alluding to the great necessity for impressing upon veterinary surgeons and stock-owners the importance of this subject, and the urgency that still exists for more careful inquiry into its nature and character, he acknowledged that his ideas had undergone very material change, and that he does not now regard the deposit in Glanders in the horse as a form of Tubercle,—Glanders being (as is also Tubercle) a disease *sui generis*. While the loss caused by many other diseases—such as Epizoötic Aphtha, Rinderpest, and Zymotic Pleuro-pneumonia—is patent to all, we are prone to overlook the slow, but certain decimation of many of our best herds by Tubercle. Besides the pecuniary loss, there is a great danger of the disease itself being transmitted to man, through the consumption of flesh of animals affected by this disease. Had the vast importance of "Tubercle" been patent to our legislators, they would not have omitted it in their Contagious Diseases (Animals) Acts. Although some of the domesticated animals may be free from its ravages, few are proof against the inoculative contagium. He noticed, in passing, the almost, if not total, exemption of the horse from Tubercle.

In speaking of the nature and characteristics of Tubercle, he considered it identical in man and the ox—all doubts being set at rest by the inoculation of animals with Tubercle taken from the human subject. He also dwelt upon the hereditary nature of the malady, and the evil consequences of breeding from any tainted stock; further, he touched upon some of the predisposing causes—such as in-and-in breeding, as followed in many of the fashionable breeds; too fine breeding; early breeding; feeding upon grasses grown on land where extensive artificial manuring has been employed; and forcing animals for show purposes, etc.

In speaking of its specific nature, the Professor regarded it as a visible manifestation and result of a constitutional diathesis; or, in other words, that it is the local manifestation of Scrofulosis, and is not of lymphatic origin, or due to proliferation and degeneration of connective-tissue corpuscles, or the absorption of broken-up matter from caseous centres, as believed by some. The Professor's reasons for the above conclusions were ably demonstrated and defended.

The diagnosing Tubercle during life, with no coinciding and collateral circumstances to guide, is extremely difficult; but the Professor's practical hints and suggestions as to the various symptoms manifested, depending upon the organs affected, were most elaborate.

How Tubercle kills, and the various morbid products with which it may

be confounded in its different stages, were severally dealt with. The Professor's paper closed with a short review of the latest theories in regard to certain cell growths.

In the discussion which followed, general testimony was given to the great benefit that would accrue to the profession at large, if the general body of Professors would only communicate the result of their scientific investigations and research, as had been so kindly done by Prof. Walley on this and many other similar occasions.

The discussion was animated and prolonged, and in it a good many of the members joined—the principal being Messrs. P. Taylor, R. Reynolds, D. Hutcheon, W. Daere, W. A. Taylor, Bromley, and Mr. T. Hopkin, the President: the principal points being the great difficulty in diagnosing the disease during life; the almost total absence, in many cases, of distinctive symptoms; whether the flesh was fit for human food, even after being well cooked; the rarity of Tubercle in the horse; its propagation by fashionable breeds becoming tainted; its great prevalence in certain districts; the advisability of "Tubercle" being included in the Contagious Diseases Acts; and the measures which had a tendency to check its development—treatment being only useful in man. Prof. WALLEY, in conclusion, said that the etiological influences often require a combination of circumstances, and that formerly there was more interchange of sex; that it is a specific and distinct disease; is peculiar to the ox; is infectious, and by inoculation contagious; and is propagated by the ingestion of milk, flesh, and tuberculous material. In the miliary or chronic form, it is slow in its growth, but rapid in the secondary or infective form; and in the last its clinical results are similar to Pyæmia. He considered the course of the disease to be—1st, tubercular deposit; 2nd, inflammation of the surrounding tissue; and 3rd, degeneration.

A cordial vote of thanks to the Professor was proposed by Mr. BRIGGS and seconded by Mr. W. A. TAYLOR, which was carried unanimously. A vote of thanks to the President closed the proceedings.

SAM. LOCKE, *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE summer quarterly meeting was held at the Queen's Hotel, Leeds, on Thursday, 18th July: the President, Mr. S. F. Fallding, in the chair. The following members were also present: Messrs. James Freeman, W. Edmundson, J. W. Anderton, John Cuthbert, J. S. Carter, J. H. Ferguson, J. L. Faulkner, R. W. Murdoch, J. Bale, J. M. Axe, Peter Walker, D. R. Sowerby, and the Secretary. Professor Walley; Mr. Pallin, 20th Hussars; Mr. James Howell, Rochdale; Mr. P. Deighton, Riccall; and Messrs. Robertson and Crabb, Leeds, were present as visitors.

Excuses for non-attendance were received from Messrs. Dray, J. and W. G. Schofield, Joseph and John Freeman, M. E. Naylor, W. G. Scriven, and T. Pratt.

The PRESIDENT proposed, and Mr. ANDERTON seconded, the election of Professor J. W. Axe as a member of the Society.—Carried unanimously. Mr. Philip Deighton, of Riccall, near York; Mr. Frederick Danby, of Bainton, near Driffield; and Mr. E. P. Dwyer, of Leeds, were nominated for membership.

Mr. FREEMAN exhibited the head of a foal affected with Hydrocephalus, which he had successfully extracted from the uterus of a draught-mare, the circumference of the head being thirty-six inches.

Mr. PALLIN exhibited the atlas and dentata of a troop-horse. The animal, while scratching its head with a hind-foot, suddenly fell violently to

the ground, and died almost instantaneously. The attachments of the two vertebræ were severely lacerated, and the spinal column depressed, etc., the atlas being completely wrenched from its position.

Mr. MURDOCH exhibited two specimens of Disease of the Heart occurring in his practice recently. In one case, vegetating endocarditis of the right ventricle and tricuspid valves, with secondary thrombi formed in the vegetations, detachments of thrombi with pulmonary embolism as a consequence, with the formation of secondary pulmonary thrombus, and hæmorrhagic infarction, degeneration and abscesses, were the appearances presented. In the other case there was dilatation and calcification of the common aorta and posterior aorta at its origin, and, as a consequence, hypertrophy of the heart.

Professor WALLEY exhibited and described the appearances of a very interesting case of thrombus of the posterior vena cava in a cow, accompanied by hypertrophy of the liver and left kidney.

Mr. PALLIN related the history of a case of rupture of the aorta, with granular deposition in the coats of the vessel.

Professor WALLEY read an able and very instructive paper on "Blood Extravasation into the Superficial Parts of the Body: its Causes, Consequences, and Treatment."

A short discussion followed the reading of the paper, in which Messrs. Freeman, Axe, Pallin, and other gentlemen took part. Mr. Pallin said that he had successfully punctured capped hocks and other bursal enlargements with a small trocar, injected tinct. iod., and applied a thick coating of pipeclay to exclude the air, etc.

Mr. HOWELL, after making a few observations on Purpura Hæmorrhagica, complimented the essayist upon the practical ability of his paper, and moved a vote of thanks to him.

Mr. FREEMAN seconded the motion, which was carried with acclamation. Professor Walley briefly replied, and an interesting meeting was concluded.

The following is the paper read by Professor Walley:—

"In considering the subject of extravasation of blood, I shall only draw your attention to a form of hæmorrhage which is very commonly met with in practice, which sometimes causes much embarrassment to the practitioner, and not unfrequently unpleasant and serious results to the patient. I refer to superficial extravasation, within (intra-cutaneous) or under (sub-cutaneous) the skin; within the muscular tissue (intra-muscular), under the sole (sub-solar), under the wall of the foot, under and within the visible mucous membranes (sub- and intra-mucous), and into superficial bursæ.

"The only predisposing causes of superficial hæmorrhage which we need notice are an altered condition of the walls of the vessels from altered blood crasis, producing an hæmorrhagic tendency, as seen in Rheumatic Purpura, Purpura Urticaria, and Purpura Hæmorrhagica. The hæmorrhagic diathesis is seldom hereditary in animals,—it is nearly always acquired; once established, however, it may remain throughout life. Those causes which so largely predispose to hæmorrhage in the internal organs—as fatty and calcareous degeneration—do not so much influence the production of superficial hæmorrhage. Certainly a septic or depraved condition of the blood predisposes equally to external and internal bleeding; so with the vessels of new tissues.

"The actual or determining causes are direct injury by blows; contusions of all kinds; in all animals, heavy especially, crushing from enforced recubation for long periods, or from constant friction and jolting in railway and sea travelling.

"The characters of superficial hæmorrhage, especially with regard to its colour-changes, are best observed in mucous membranes and in white skins.

"If the extravasated blood is venous, the colour is dark at the outset; if arterial, a bright red; in either case it ultimately becomes dark, from non-oxidation, and subsequently the colour-changes are those (with which I imagine you are all well acquainted) which may be seen in the contused or black eye of the human subject.

"If the hæmorrhage is intra-muscular, there may not be much external enlargement, but there will be much interference with the action of the involved muscle or muscles, in the case of the limb causing stiffness or lameness.

"If it is under the skin or in superficial bursæ, swelling is marked; while if it is intra-cutaneous the swelling is prominent and abrupt, and the hair is erect. In any case the swelling may be increased peripherally by infiltration of serum. If intra- and inter-muscular, and intra-cutaneous hæmorrhage, the parts are comparatively hard and unyielding; while in subcutaneous and bursal hæmorrhage we have either pitting, resilience, or fluctuation, depending upon the quantity of blood and its condition, and as to whether it is diffused or circumscribed.

"Heat may or may not be present; or if absent at the outset, may be produced in the subsequent changes.

"The amount of pain will depend largely upon the extent of the hæmorrhage, the characters of the structures, and the temperament of the patient: if the blood is thrown into parts where there is an abundance of connective tissue, or into loose flaccid bursæ mucosæ, the pain is comparatively slight; but, on the contrary, if it is extravasated underneath tense aponeurosis.

"When thecæ, capsules or horn press upon large veins, the pain is often extreme.

"Tenderness is most marked when the extravasation has been produced by a sharp blow; under no circumstances is it so observable as in speedy cut; the slightest touch causing the animal to evince unmistakable evidence of pain.

"*Hæmorrhage Characters.*—One of the best physical evidences of subcutaneous hæmorrhage, where the blood is partially coagulated, is crackling, resembling that of Emphysema, on the application of pressure. This is produced by the forcing of small coagula of blood from one areola of the connective tissue to another, and to breaking down of the dividing septæ. The exploring needle is invaluable in the diagnosis of hæmorrhagic swellings, and it still further aids in determining the source of the bleeding—*i.e.*, whether arterial or venous—and the subsequent changes which the blood undergoes. Moreover, it always gives a certain amount of relief, and from the shape of the puncture no fear need be entertained that air will gain admittance to the imprisoned blood. The physical characters of hæmorrhagic swellings vary materially with the changes which the extravasate subsequently undergoes—*i.e.*, whether it remains fluid, coagulates, and becomes organized, absorbed, or degenerates.

"The constitutional effects of healthy superficial hæmorrhage are in the great majority of cases of no moment; but if the hæmorrhage is extensive the same symptoms will be developed as in internal hæmorrhage, as although the blood is not actually thrown out of the body, it is for a time as good as lost to the system.

"Constitutional symptoms will be largely regulated by the amount of pain and tenderness.

"The subsequent physical changes in hæmorrhage will depend upon the alterations which take place in the extravasate. If it undergoes gradual absorption, the skin assumes its normal condition, and the heat, pain, and

tenderness gradually subside. If a cyst is formed, the active symptoms pass off, and fluctuation is established; while if it degenerates and forms an abscess, the active symptoms increase in intensity until the pus is evacuated. If the blood remains fluid and tends to degeneration, it will be found, on using an exploring needle, to become darker in colour from non-oxidation, and gradually becoming sanio-purulent.

"In depraved extravasates, as in Purpura Hæmorrhagica, the skin frequently gives way, ulcerates, and allows of the evacuation of the blood, or in extreme cases large sloughs are formed.

"In Rheumatic Purpura the extravasate usually becomes absorbed, or in bursal or arthritic extravasation undergoes organization, and forms polypi, which may remain connected with the wall of the bursæ, or may become detached, undergo calcareous changes, and form floating bodies. Its most marked characteristic is its metastatic reaction.

"In Purpura Urticaria absorption nearly always takes place; but here, too, metastasis is marked.

"In healthy extravasation within or under mucous membranes, absorption usually takes place, though some of the serum may, and frequently is, squeezed out, and escapes by the natural outlet of the part. In unhealthy extravasation, ulceration and sloughs are the most frequent results, followed by cicatrization. In sub-solar extravasation, extensive suppuration may be established, or the blood may be simply infiltrated into the interstices of the horn, and be gradually removed with each successive shoeing. In laminal extravasation, suppuration is not so frequent, but the fluid portions become absorbed while the solid undergo molecular degeneration, interfere with the nutrition of the laminæ and the horn, and produce separation or 'seedy-toe.' Either in laminal or sub-solar extravasation, fistula, phlebitis, thrombus, or systematic multiple abscesses may be established, if the blood is in a degraded condition or the animal exposed to adverse influences.

"If air gains admittance to the extravasate, it may undergo putrefaction, but it must not be assumed that the admission of air is absolutely necessary for the establishment of this process. No air can permeate the skin of the ox, and yet putrefactive collections of matter are formed in large quantities, as the result of unhealthy extravasation, in Foot-and-mouth Disease; neither can air penetrate the horny tissues of the foot, nevertheless putrefaction goes on here likewise.

"The results of bursal or subcutaneous hæmorrhage, where neither absorption nor suppuration takes place, are as follows: the extravasation becomes surrounded by a layer of organized fibrin or condensed connective tissue, encysted as it was once called, and forms a serous cyst or a hæmatoma. The cyst wall is composed partly of condensed connective tissue, partly of organized material formed from lymph thrown out from the vessels of the surrounding connective tissue as the result of irritation, and partly—as was demonstrated by Prescott Hewitt—of the innermost layers of the clot, which 'being in close apposition to the healthy structures, must speedily undergo those changes which lead to organisation and conversion into membrane.'

"The cyst wall (as is observed in capped elbow, knees, and hocks) may, by successive depositions of layers of fibrin on its inner surface, become a great thickness; the fluid parts of the blood by the contraction of the fibrin are forced into the interior of the cyst, and become decolorised, or the fluid may remain (owing to the breaking up of the red corpuscles) of a dirty brownish-red colour and of a comparatively thick consistence even after the lapse of years. Very frequently large quantities of the red corpuscles, with a little fibrin, become massed together, and surrounded by or enveloped in a thin layer of coagulated fibrin, which may be attached by a delicate pedicle to the internal wall of the cyst; or the whole mass may float free in

its cavity, forming a kind of detached hæmatoma. In either case crystals of long matter in the shape of plates may become developed in the mass, and it may ultimately become completely calcified, constituting a species of loose or floating osteophyte. This calcifying process is a long one, and proceeds most rapidly if small recurrent hæmorrhages take place from the cyst wall. In some instances the whole of the contents of such cysts are absorbed, their walls collapse and form a slit or cicatrix, the surrounding structures becoming pigmented; and not infrequently hæmatoidin crystals are found deposited in them.

"The last result of extravasation of which we need take cognizance here is suppuration: the coagula break down, suppurative inflammation is established in the surrounding tissues, and the area of the original abscess may become considerably extended.

"*Treatment of Subcutaneous and Intra-muscular Ecchymoses.*—If the attention of the practitioner is directed to the case immediately on the infliction of the injury, the most radical plan of dealing with it is to apply cold by means of loose bags of ice, or bandages saturated in refrigerant and anodyne solutions—one of the best solutions for this purpose being liquor plumbi and arnica tincture. Moderate pressure and friction are very beneficial.

"If attention is not early directed to the case, a totally different line of treatment is called for: the irritated nerve fibrillæ must be soothed, the tissues relaxed, and the parts kept of their normal temperature, or even warmer, by persistent hot fomentations and the occasional application of mild stimulating and anodyne liniments, as ammonia and turpentine, or soap liniment with laudanum; in the case of the limbs, the most effectual method of fomentation is the application of a flannel bandage wrung out of hot water, with a dry one or a piece of gutta-percha tissue applied over it.

"If the tension is great, and much pain is evinced, puncturing by the exploring needle will usually give immediate relief.

"Direct incision into the ecchymosed tissue for several days is not advisable, more especially if there is an entire absence of fluctuation; but once fluctuation becomes thoroughly established, and there is no evidence of absorption, the imprisoned blood must be evacuated, otherwise suppuration or the formation of a cyst will follow.

"In the removal of a fluid or semi-fluid extravasate, it is very unwise to make a small incision; it only irritates the parts, and even though the fluid may be temporarily drained away, the aperture will rapidly close and the fluid re-collect.

"A free bold incision is by far the best; the bugbear of blood-poisoning, as the result of putrefaction of the clot and absorption of the putrefactive products into the circulation, need not be thought of, as practically no such result follows the evacuation of an extravasate, providing the system of the animal is healthy and the surrounding air pure.

"Even if putrefaction of the extravasate does go on, it does not necessarily follow that septicæmia will result. I have frequently evacuated large and numerous extravasates, containing quarts of putreficial and putrefying matter which has lain for many days under the skin, without any such result. After the incision, the blood and fluids should be carefully and thoroughly evacuated without resorting to any violence, otherwise secondary hæmorrhage from injured vessels, or absorption of putrefactive matter from raw surfaces, may take place.

"The sac should be thoroughly syringed out with a mild solution of carbolic or salicylic acid, a small pledget of tow, saturated in creosote or carbolic liniment, inserted between the lips of the wound, and a bandage carefully and evenly applied over the whole, so as to compress the walls of the sac and favour the adhesive process, and at the same time prevent the admission of

air. It must not be forgotten that, in extensive hæmorrhages, the blood is temporarily lost to the system; consequently general treatment, as the administration of stimulants and styptics, must be adopted, perfect rest enjoined, and good food allowed.

"In the treatment of sub-solar or laminal extravasation, all horn must be removed, several incisions made into the infiltrated structures, and the foot immersed in hot water for as long a time as possible, and subsequently dressed with carbolic oil and poulticed.

"In the treatment of blood cysts several courses may be adopted:—

"1st. Tapping of the cyst and injection with iodine solution or carbolate of glycerine, with the application, where practicable, of a compress.

"2nd. The insertion of a seton through the whole length of the cyst, and saturating it with an irritant.

"3rd. Free incision throughout its whole length, removal of the lining membrane by dissection, scarification of the internal wall, and subsequently treating as a common wound.

"4th. A tolerably bold incision into the most dependent part of the cyst, and the introduction of a plug of tow saturated with creosote liniment—changing it once or twice a day, and continuing its use until signs of adhesion are evidenced.

"As to which of these methods of treatment should be adopted, the choice must be determined by the special circumstances and characters of each case; but in my experience no method has been so productive of good results as free incision and forming the cyst into a common wound.

"It sometimes happens that in old cysts the amount of adventitious deposit is so great as to leave a large tumour after the evacuation of the fluid contents. In these cases it is better to remove the whole mass at once by abscission."

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE fifty-sixth quarterly meeting of the Association was held at the Medical Institute, Hope Street, on July 22nd, 1878, Wm. Whittle, Esq., President, in the chair.

There were present Messrs. Morgan, Reynolds, Elam, Cave, Thos. Leather, Moore, Stevenson, Chislall and Ellis of Liverpool; Prof. Walley, Edinburgh; Messrs. T. Greaves, T. Taylor, W. A. Taylor, Hopkin, Faulkner, Locke, Roberts, and Wolstenholm of Manchester; H. Barnes, Malpas; W. Dacre, Altrincham; Darwell, jun., Northwich; W. Woods, Wigan; H. Ferguson, Warrington; W. H. Roughsedge, St. Helens; D. M. Storrar, Chester; N. M. Barron, Sutton; J. A. Polding, Bury; Lewis, Tarporley; Langford (veterinary student), and the Secretary.

Letters of apology for non-attendance were received from Prof. Williams, Messrs G. Fleming, E. Nuttall, John Kenny, A. J. Cartwright, C. E. Ogden, C. Cartwright, J. P. Rothwell, W. Hutchinson, B. Kettle, Jas. Freeman, A. B. Proctor, W. E. Brown, etc.

The minutes of the previous meeting were read and confirmed. Messrs. James Watson, Liverpool, and W. H. Roughsedge, St. Helens, were unanimously elected members of the Association; and the following gentlemen were nominated for election as members at the next meeting —Messrs. Chislall and Stevenson, Liverpool, and Lewis, Tarporley.

Professor WALLEY, before reading his paper, said he wished to give a brief description of a case of what he considered was Purulent Inflammation of the Uterus of a cow, which he had seen a day or two ago, in company with Mr.

Bampfield Kettle, of Market Drayton, under whose care she at present was.

"The patient was a white cow, which had been observed to be dull and languid since about the month of March last. About eight days ago she ceased giving milk; her abdomen was greatly distended on the right side; the temperature, pulse, and mucous membranes were normal. On examination *per vaginam*, we found the uterus twisted. *Diagnosis*,—A collection of fluid in the uterus. The cow latterly became weak and unable to rise; rumen tympanitic, to relieve which we introduced the trocar and cannula; but there being little relief from this operation, and the uterus being twisted, we resolved to introduce the trocar and cannula into the uterus from the side, where, immediately on the withdrawal of the trocar, there was an escape of purulent matter. Mr. Kettle, on seeing that it was pus, suggested the desirability of having the quantity measured. This we did, and found that it amounted to twenty-two gallons, independent of a considerable quantity which escaped before we could obtain a vessel to receive it.

"The pus which came away at first was sweet, and of a creamy colour and consistence; but the cow chanced to alter her position, and in doing so she displaced the cannula, and on re-introducing it by means of the trocar, the fluid that came away was much thinner, as if a different sac had been punctured, but by-and-by the different fluids appeared to blend. On examination *per vaginam* immediately after the withdrawal of the fluid, we were somewhat surprised to find the position of the uterus altered." [This will be readily understood now, after the description of the *post-mortem* examination, which Prof. Walley kindly sent me soon after his return; although he could not so easily account for it at the time, he being of opinion that the fluid was in the uterus itself. The following is a copy of Prof. Walley's letter, descriptive of the *post-mortem* appearances. He says: 'On my return to Market Drayton, at the end of the week, I found the cow dead. Mr. Kettle had made a *post-mortem* examination, and preserved the uterus, with its contents and connections, for my inspection. We found the collection of pus was not in the uterus, as we had thought, but in an extra-uterine abscess connected with the walls of the right cornu. The wall of the abscess was in one part 2½ inches thick, and of a cartilaginous consistence; from six to eight gallons of pus still remained in it, making at a moderate computation about thirty gallons in all. The uterus and vagina were otherwise healthy.'—*Sec.*]

Professor WALLEY then read his paper on "Slough, Carbuncle, Boil, and Erysipelas in the Coronet and Pastern, with the Treatment of Quittor." The Professor in a very lucid manner described the causes, symptoms, and distinguishing characters of each of the diseased conditions treated of in his paper, briefly indicating the general principles of treatment to be followed in each, but entering more in detail into the treatment of that unwelcome visitor to every veterinary surgeon's establishment—Quittor. He said that, after having tried caustics in every variety and form of application, he found no remedy so satisfactory as vertical section with the actual cautery. Where the cartilage was diseased, he considered it futile to attempt to remove the diseased portion only; it was necessary, in his opinion, to remove the whole of the cartilage.

Mr. GREAVES said that wounds of the feet were a most important part of a veterinary surgeon's practice, and he would have rejoiced greatly if Professor Walley had been able to bring before them, as a result of his medical research, the knowledge of some remedy that they could have applied, with confidence in its efficacy, to those inveterate wounds and diseased conditions so frequently met with in the region of the horse's foot,—those unhealthy wounds situated in the coronet and laminæ, arising from the parts being crushed or bruised, sometimes involving the whole of the

laminæ from the solar surface to the coronet. In some cases, he said, you will carefully remove the horn, but it does not heal. You will then continue constitutional treatment with your local remedies, but healthy action is not established. You poultice, apply every variety of caustic, combined with alterations of the shoe and varying positions of the limb, and yet with no better result. You try bandaging, and anon you leave it bare; but notwithstanding all your efforts, some cases will continue to go on from bad to worse, until finally they end in Canker. He was rather disappointed that Professor Walley, in his description of the treatment of these diseased conditions, had not taken sufficient notice of the collateral agents necessary to be adopted in all such cases—such as the best position of the limb and the most appropriate form of shoe, when it was advantageous to poultice and when to cauterize, when a bandage was beneficial and when it was better to leave the parts uncovered, etc. Any man who could discover a remedy that would be at once both quick and powerful in the treatment of such cases as he had referred to, would deserve the thanks of the veterinary profession.

Mr. TOM TAYLOR said that as Quittor, when established, was intractable to treat,—we ought to direct our attention as much as possible to its prevention. One great cause of Quittor, in his experience, was in the shoeing smith, when fitting his shoe, allowing the wall of the hoof at the heels to overlap the sole, and the pressure of the shoe on the parts in that position producing a suppurating corn, very often ending in Quittor. Where the sinuses communicated with one another in Quittor, you might destroy the canal by caustic injections; but he had a great objection to the use of caustic plugs, as you could not regulate their action—open joint being liable to follow their insertion into a deep sinus. He believed that a great deal of the success in the treatment of such cases was due to constant attention, and the system of frequently varying your caustics: one was apt to get tired and somewhat careless of such cases, when they had been long under treatment.

Mr. WELSBY agreed with Mr. T. Taylor, that constant attention and a careful adaptation of the shoe were great auxiliaries in the treatment of such cases. He had found most success in the treatment of Quittor follow a bold but considerate use of the actual cautery; and had seen a number of bad cases of Quittor arising from corns, but found them comparatively tractable when early and energetically treated. He had not experienced much difficulty in the treatment of sloughs in the coronets and pasterns, and he disagreed with Professor Walley in its being either necessary or beneficial to segregate the diseased parts with caustic in sloughs and erysipelatous inflammation, as recommended by him in his paper.

Mr. W. A. TAYLOR said that a Professor, from the fact of his elevated position, was supposed to enjoy special and peculiarly favourable opportunities for investigating the nature of disease, and various remedies, and to be possessed of equally special powers to enable him to take full advantage of such opportunities when they arose. Consequently, the onus of a professorship was no light matter. He was always expected to know a little more than an ordinary practitioner, and to be able to tell them something new concerning almost any matter which they (the professors) might elect to bring before them. It was possibly an idea somewhat akin to that which pervaded their own minds on coming to hear Professor Walley's paper in the present instance; and because he had not altogether come up to their exaggerated conception, and brought to light the real philosopher's stone—which was to heal all by a touch—they felt that they had just cause for being dissatisfied, and meant to express that dissatisfaction by a severe criticism of what he had given them.

Mr. Taylor then referred to the great importance of the collateral treatment in all diseases of the feet, as Nature herself, when properly assisted, did

a great deal. He considered that a great stumbling-block in the way of the successful treatment of Quittor was defective diagnosis—a tendency to treat every case as if the cause was always the same; and referred to the difficulty of being always able to diagnose with accuracy whether the cause was caries of bone, ulceration of cartilage, or disease of the lateral ligament. You must vary your treatment as the symptoms change. He condemned deep vertical firing as being both cruel and unscientific. He had also considerable difficulty in accepting the theory advanced by Professor Walley, that a certain kind of slough, called by him "munching slough," situated about the legs and heels of cart-horses, was produced by the animal himself biting the parts. He was of opinion that the bite was only a slight exciting cause, and that the predisposing and principal cause of the sloughs was the irritable and inflamed condition of the limb at the time, doubtless due to the practice in that part of the country—as related by Professor Walley—of riding the horses through sea-water at the conclusion of their day's work: the reaction after the cold, and the irritation of the salt, setting up a kind of inflammatory action.

Mr. DACRE described a mode of applying the actual cautery in the treatment of Quittor, which he had witnessed the application of by a professional friend of his in France. The instrument was a pyramidal-shaped puncture-iron with a platinum point; the part operated on was the outer aspect of the coronary band of the near fore-foot. This he punctured with the above instrument over the entire surface of the affected part—the punctures being about a quarter of an inch apart; and although he had not an opportunity of witnessing the result of this treatment, the gentleman expressed himself as being perfectly confident of its success. The principle was the same as in firing vertically—viz., the destruction of the sinuses; but if it was equally successful, it was certainly a preferable mode of operating. He had very little experience of Quittor in his present practice; but he had formerly used, with very good results, a plug of nitrate of silver.

Speaking of sloughs, he had seen some cases where the animal appeared to suffer very great pain—becoming quite unable to stand, and having to be put in slings; but, like Mr. W. A. Taylor, he did not agree with Professor Walley, that what he termed "munching sloughs" were due principally to the animal biting his own legs. Hot fomentations, poultices, etc., were his mode of treating them, until the sloughs came away; and then he treated them as a common wound.

Mr. C. W. ELAM said he had considerable experience of Quittor, and had tried almost all the known methods of treating it; but he considered that employment of the actual cautery was one of the most efficient remedies that he had ever tried. In those cases arising from a suppurating corn, and where the heel of the pedal bone was injured or diseased, he generally found that, by passing a small circular firing-iron right through the heel, a cure was effected. Referring to the question of cruelty, he did not consider that anything was cruel which was done with a humane desire to alleviate suffering and cure disease, and was the best known remedy to effect that purpose.

Mr. HOPKIN said he was sure that they were all much indebted to Professor Walley for the able manner in which he had brought such an interesting and practical subject before them, notwithstanding the somewhat severe criticisms with which they had assailed it. As to the treatment of Quittor, the most efficient remedy that he had ever tried was a paste made of sulphur and sulphuric acid, and painted over the part. It brought out a very large slough, and appeared to excite healthy action in the adjoining textures. As to the wounds in the feet referred to by Mr. Greaves, where the laminæ were injured from the solar surface to the coronet, and arising from pricks or other causes, he considered it better not to cut out the whole

of the portion of the wall covering the diseased laminæ, but to make an opening in the wall in two or three places. He did not consider that Erysipelatous Inflammation was very common in the horse.

Mr. REYNOLDS referred to the criticisms advanced by some of the members present as to the want of detail and the absence of specifics in Professor Walley's paper, and said that, as practitioners, they wanted *principles*, not *nostrums;* and he considered that Professor Walley had acted with a wise discretion, in the construction of his paper, in keeping to the former and avoiding the latter. As to the treatment of Quittor, a professional friend of his, who had a very extensive practice and great experience in the treatment of the disease, employed the actual cautery in a very bold manner indeed; in fact, he was what might be termed "a rough operator." His custom was to fire vertically right through the coronary substance; and what appeared to him (Mr. Reynolds) as the most remarkable fact connected with this mode of operating in this gentleman's hands, was that it was never followed by open joint, and was invariably successful. He thoroughly agreed with Professor Walley, that where the cartilage was diseased it was necessary to remove the whole of it.

Mr. WOODS did not resort to the actual cautery in the treatment of Quittor until he had tried more simple remedies first; but when he had an intractable case to deal with, he generally resorted to it in the end.

Mr. MORGAN said that he had often found sloughs very intractable, especially in old horses, in which the constitution was weak and debilitated. Many of them even died from the acute pain and inflammatory fever. As to Quittors, a great number of them arose from bad shoeing, pricks, etc. He considered that firing was one of the best remedies when deep and effective. As to the cruelty of the operation, he did not consider that any operation was cruel when it was necessary and advantageous, and he believed that the administration of chloroform to the horse was in many cases very unsatisfactory. In fact, where you could fire or operate on an animal without casting him, it was less cruel than to go through the operation of casting and fastening him in order to administer it. He considered that people's sympathies were very much misdirected in regard to this subject of cruelty to animals, and this was mainly due to the fact that the principal advocates of the doctrine were mostly old maiden ladies, who had very large hearts but very little mental capacity to discern what was or was not an act of cruelty.

He considered that their thanks were due to Professor Walley for coming among them and interchanging ideas with them. He was of opinion that while the Professors could doubtless teach them a good many things, they, on the other hand, could contribute to the Professors' knowledge many practical facts which they could not so readily pick up in their own private studies. Home-made Professors were not the best, and he would be glad to see the Professors coming out among the veterinary medical associations more than they were in the habit of doing.

Mr. GREAVES wished to remove an impression from the Professor's mind, and which he might have formed concerning the remarks which he made at the commencement of the discussion—viz., by expressing his regret that he (the Professor) did not enter more minutely into what might be termed the *mechanical* part of the treatment of diseases of the feet. But while that was true, and he as an old practitioner placed great value on these collateral agencies, at the same time he thoroughly endorsed the sentiments of appreciation which other members had given expression to, in reference to the character and construction of his very valuable and suggestive paper.

In reference to the question of cruelty, especially as applying to the operation of stripping the sole in the treatment of Canker, the operation was undoubtedly a most painful one; but when he had seen success follow

it in twenty-eight or twenty-nine cases, after various dressings for a period of eighteen months, he had no hesitation in resorting to it in the interests of humanity itself. Of course, in such cases the animal required to be cast, and consequently there was no excuse for omitting to give chloroform. In the treatment of Quittor, he was in the habit of first trying to destroy the sinuses by injections of a saturated solution of the sulphate of zinc or other liquid caustic, and if that did not succeed, he fired.

Professor WALLEY, in reply, said that in reference to those intractable wounds of the feet mentioned by Mr. Greaves, he was of opinion that they were of the nature of Canker from the commencement, and he did not believe that Canker could be cured by an external dressing, as he considered that it was due to a constitutional diathesis, and consequently fresh Canker cells would be produced almost as fast as you destroyed them. And even when you appeared to have arrested their development, and healed the part in one foot, it was very likely to break out in another. Therefore it was this constitutional diathesis existing in the system at the time the injury to the foot had been inflicted, that caused these wounds to take on this cankerous character. He considered that bandages to wounds of the feet did more harm than good, although in most cases it was advisable to exclude the atmosphere by some kind of adhesive dressing. As to the difficulty of accurately diagnosing the exact cause of Quittor, referred to by Mr. W. A. Taylor, he could not understand how any gentleman of any professional experience found difficulty in coming to an accurate conclusion as to the cause of Quittor, if he attended to the commonly recognised means of diagnosis. In reference to what, for want of a better name, he had termed "munching sloughs," he had taken considerable trouble to watch those animals which were subject to them: he had witnessed the animal bite his leg, and in the very place he had found a slough to follow as a consequence. He admitted that there might be considerable heat and irritation of the limbs as a result of the practice which he had referred to of walking the horses through sea-water at the close of their day's work, especially as a great number of them had a large quantity of hair on their legs; but he did not consider that it amounted to what could be termed inflammatory action, and referred, for proof that biting the limb was of itself quite capable of producing such a result, to the practice of boys at school causing considerable destruction of the skin on their hands by sucking the part or rubbing it with their knuckles; and the positive example of the destruction of the skin and subcutaneous tissues resulting from one horse biting another. In answer to Mr. Welsby, he considered it was of great advantage, in the treatment of sloughs and Erysipelatous Inflammation, to segregate the diseased parts, by means of caustic, from the healthy.

Sloughs in the coronet had a great tendency to end in Quittor unless carefully watched. In reference to the advantage of deep firing in intractable cases of Quittor, he instanced a case in which he was consulted. A somewhat inexperienced professional gentleman had charge of it; and he (Professor Walley) recommended deep vertical firing, but left the gentleman to operate himself. He called again in a few days, and found that his instructions had been carried out with a vengeance. The operator had fired both *deep* and *close;* the result being that the whole piece came out *en masse.* The Professor was considerably alarmed at first, and apprehensive of open joint; but instead of that the case rapidly recovered without any more trouble. As to the complaint made by some of the members, that he had not taken sufficient notice of the mechanical or collateral treatment of these diseases, it had been in great measure his principal aim in the construction of his paper to avoid doing so: *first*, because he considered that they were fully as well acquainted with these contrivances and auxiliaries as he was;

and *second*, because he considered that doing so would have appeared like offering an insult to their professional knowledge and experience, and treating them on the same level as he would a class of students. As to his having such splendid opportunities for investigating the power and remedial efficacy of every new agent that was being discovered, he begged them to remember that he had his living to earn as well as themselves, and that although he endeavoured to make good use of his head, and to take every advantage of the opportunities which his position gave him, he had also to labour with his hands. All this materially limited that time for quiet research which some of his friends imagined a Professor enjoyed.

A general conversation here took place in reference to the best means of administering chloroform, and of watching its effects; after which Mr. W. A. TAYLOR, in rising to propose a vote of thanks to Professor Walley for his very able paper, said that he (Professor Walley) must look upon their free and somewhat unsparing criticisms as evidence of the interest which the subject and his mode of treating it had created in the minds of the members present. On such a practical subject it was impossible, and even undesirable, that they should all completely agree; and it was a virtue, rather than a fault, in the arrangement and construction of his paper, that it should be the means of eliciting such a variety of opinions as had been enunciated that night. He was sure, therefore, that he only expressed the unanimous opinion of every gentleman present, when he said that they were all very much indebted to Professor Walley for his most valuable and instructive paper. He begged to move a hearty vote of thanks to Professor Walley. The motion was seconded by Mr. FAULKNER, and carried by acclamation.

A vote of thanks was then accorded to the President, and the meeting adjourned to the Adelphi Hotel, where a substantial tea was partaken of.

The cloth being removed, and a little of that which is said to "make glad the heart of man" being introduced, the usual loyal, patriotic, and professional toasts were given and responded to, and a most enjoyable and harmonious evening was spent. D. HUTCHEON, *Hon. Sec.*

DUBLIN PATHOLOGICAL SOCIETY.

TUBERCULAR DISEASE IN THE LARGER CARNIVORA.

AT a recent meeting of the above Society, the Rev. Dr. HAUGHTON, in exhibiting a specimen of tubercular disease of the lungs in a lioness, said:—"In the present condition of this specimen there is really nothing to be seen. I brought it here as it illustrates the error of the teaching of the late Dr. Graves—that the cause of death of the large carnivores, on coming to these countries to our menageries and gardens, was due to Tubercle; and others have followed him in the opinion that the Tubercle of which these lions and tigers died, on importation to this country, presents many features similar to human Tubercle. With the assistance of Dr. Little in old times, and, recently, with that of Dr. Macalister, I have dissected upwards of a hundred large cats, lions, tigers, leopards, pumas, and jaguars, and we never got a single case of lung disease that could be deemed Tubercle. These animals die of two distinct forms of disease, as far as my experience goes. They die either of pure Pneumonia, affecting generally only a small portion of the lung—sometimes not larger than a Seville orange; yet that small amount of consolidation kills the lion or tiger. Observations were first made on the point in the London Gardens; and my attention was directed to the researches of Dr. Crisp and other London observers, who found that when these animals died of pure Pneumonia, they were capable of enduring a very small amount

of it. The progress of the disease is very rapid, and they die within about seven days from the time when they first show the distress in breathing. Sometimes they die of pure Pneumonia, and sometimes the Pneumonia appears to be symptomatic of Fever—a mysterious kind of putrid Fever, which the Germans call Milzbrand.* It is accompanied by a purulent condition of the kidneys, and a complete softening down of the liver. In some cases, especially those of tigers, the animal lives about seven or eight days after it has been attacked with the Fever. Ulcer spots form here and there on the skin, and the kidneys are always found to be in a state of purulent degeneration. In the case recently examined, the entire substance of the kidney was destroyed, except a portion of the cortical, the whole centre of the kidney being a mass of pus; and this occurred within six or seven days. The animal was a lioness, which had been imported from the Cape, at considerable expense, for the purpose of crossing her with our old lion. Our breed of lions had died out, and we were most anxious to obtain a fresh female direct from Africa. This was the second animal that we lost; and although, of course, a great deal would be gained by introducing a fresh healthy lioness from Africa, we ran great risks in the endeavour to carry out the process of acclimatisation. The animals born and bred in Europe are healthier than those brought immediately from their native wilds, because their ancestors have been acclimatised; and, therefore, they have a much better chance of living. This was a very fine lioness; but she never seemed to have the appetite that she ought to have had. About two months ago, or a little more, she was seized with an affection which I thought at first was Pneumonia, from the rapid flank breathing and other appearances of distress. But when she did not die at the end of the week I knew that it was not Pneumonia she had. Her appetite continued, and she did not lose it until three days before her death, and was able to eat pigeons, rabbits, goats, and all other possible luxuries that we could get for her, without suffering much pain. But during the three days before her death the poor creature suffered very much. Dr. Macalister, Dr. Little, and Dr. McSwiney, were present at the *post-mortem* examination, but I was not. Dr. Macalister reports that he never before met with a case of the kind. The lung was perfectly hard and consolidated, and presented an appearance quite different from that of the soft pneumonic spots that we had been previously accustomed to meet with. Dr. Little made a partial examination of the diseased structure, and I believe he is of opinion that it is true Tubercle. It is the first case of the death of one of these animals from Tubercle that has come under my notice. I have ascertained that, in the former cases of death of these animals, the disease was not true Tubercle, but Pneumonia. I wish to mention, in connection with this case, an interesting fact with respect to monkeys. It was long believed, on the authority of Graves and others, that monkeys in the Dublin gardens died of Tubercle; but on dissecting a great number of them, I found that they had died of Scurvy. I found purpuric spots in the kidneys, pericardium, and heart, which proved that the cause of death was internal Purpuric Scurvy. I attributed this to their bread and milk diet, and accordingly we stopped it, and gave them fruit and fish; and from that moment the mortality stopped. I believe there are no zoological gardens in the world in which the monkeys are healthier and live longer than in ours. The case now submitted shows the necessity for careful *post-mortem* examinations of these animals before coming to hasty conclusions as to the causes of their death. It would appear, at first sight, to be natural to suppose that they died of Phthisis, but that is a mistake."

* Surely this is an error! Milzbrand is Splenic Apoplexy or Fever, and does not present the lesions described above. It is a totally different disease.—ED. *V. J.*

ROYAL AGRICULTURAL SOCIETY.

AT the monthly meeting held on July 31st, the Hon. W. EGERTON, M.P., reported that the veterinary committee had received the balance-sheet relating to the grant to the Brown Institution to defray the cost of experiments into Pleuro-pneumonia and other diseases, up to the end of 1877; and that Dr. Burdon Sanderson had resigned his position as professor-superintendent of that institution, but that he would still take an active part in its management, and would continue to serve on the committee. This report was adopted.

NORTH AMERICAN CENTRAL VETERINARY MEDICAL ASSOCIATION.

THE second meeting of the above Association took place at Ottawa on July 4th, when subjects of interest to the profession were discussed. During the remarks of Dr. COLEMAN, the President, who read a short pithy paper on "Diagnosis," he mentioned that the Vice-president, Mr. R. C. Hutchings, of Watertown, New York, had just sailed for England, and would on his return give the Association an account of foreign veterinary institutions, etc. Mr. MURCOTT gave an interesting description of a difficult case of parturition he had attended, which was well received by the meeting. Mr. C. Jalloway, V.S., Montreal, and Mr. George Falls, V.S., Perth, were unanimously elected members. The success of the Association is highly gratifying to the promoters. The next meeting, we understand, takes place at Brockville.

Jurisprudence.

PARTURITION IN THE COW: HOW IS IT ACCOMPLISHED?

AT the Melksham Petty Sessions, on June 14th, before Sir C. Hobhouse, Bart., in the chair, W. Locke, Esq., and T. J. Heathcote, Esq., James Phillips, of Hindon, drover, was summoned by Mr. William Peters, inspector to the Cirencester Independent Association for the Prevention of Cruelty to Animals, for cruelly ill-treating a certain cow at Melksham, on the 26th April, by driving the same when in the act of calving. Mr. George Lewis, farmer, of Heddington, was also summoned, for that he, being the owner of the cow, did occasion the cruelty by causing it to be so driven. The informations were laid by Inspector Perrett, of the Wilts Constabulary. Mr. H. C. Tombs (Kinneir and Tombs, Swindon), appeared on behalf of the Cirencester Society to prosecute; and Mr. J. K. Bartrum, of Bath, defended. The defendants were proceeded against on separate informations, but the cases were for the sake of convenience heard together, it being understood that Mr. Lewis should be allowed to give evidence.

Mr. Tombs, in opening the case, said he appeared on behalf of the Cirencester Independent Association to support the summonses against Phillips, who was a drover earning his living by driving cattle from various markets and fairs to their destinations, and also against Mr. Lewis, farmer, for cruelty to a cow by driving and causing it to be driven whilst in the act of calving. As the summonses set out, Phillips was charged with committing the act of cruelty, and Mr. Lewis, who owned the cow, was charged with causing it to

be driven, for after he had had positive knowledge of the cow's condition he directed the drover to drive it on. The day in question (Friday, April 26th), was Chippenham market day; and Mr. Lewis having bought this and another cow at the market, commissioned Phillips to drive them to his home at Heddington, on the way to which place he would have to pass through Melksham. The drover brought the cows from Chippenham to Melksham —about seven miles; and on arrival at the latter place went, with another drover whom he met in the town, to have some refreshments after his walk, and the cattle were left standing in Melksham Market-place, just opposite the police station. Witnesses would be brought before them—witnesses who, the astuteness of his friend Mr. Bartrum notwithstanding, could not be contradicted—who would prove that the cow was then seen to be positively in the act of calving, and the legs of the calf were visible for several inches beyond the body of the cow. These witnesses went across to the King's Arms Hotel, found Phillips, and told him about it. He was informed by Inspector Perrett, an old and experienced officer, of what was going on; and Phillips then told the Inspector that when he came into the town from Chippenham he tried to put the cow in the Bell Inn stables, but that they could not take it in, as the stables were occupied. That statement on the part of Phillips clearly showed that he knew the condition in which the cow was; and with that knowledge, whatever he afterwards did in committing an illegal and cruel act, although he acted under the direction of his master or any one else, rendered him amenable to the criminal law, because no orders, however positive, could justify a man in breaking the law. At this stage, Mr. Lewis himself came upon the scene, and this was where his liability began. He was informed by Inspector Perrett of the condition in which the cow had been seen to be, but nevertheless he ordered Phillips to drive the cow to a public-house called "Arter's," about a mile out of Melksham on the road toward Heddington. Perrett warned Phillips that if he did so he should summon him; but notwithstanding this, Phillips, after a seven miles drive, and with the knowledge that parturition had commenced, drove the cow a considerable distance beyond Arter's, where it was at length put into a field. With such facts as these before them, the Bench would have a difficulty in coming to any other conclusion than that Phillips had broken the law, and that it was impossible for him to screen himself behind the defence which would possibly be raised in his behalf—viz., that he was simply carrying out the orders of his master, Mr. Lewis. When his master was not present he showed that he had full knowledge of the state the cow was in by his endeavour to put her in the Bell stables; and yet, when afterwards his master told him to drive her on, he drove her more than a mile. That being so, he could not screen himself behind his master's directions, and could not get rid of the act of cruelty of which he had been guilty by driving the poor animal when it was in the act of parturition. As he had said, the cow was driven beyond Arter's publichouse: he should prove that the cow two or three times got into the hedge and tried to lie down, but was hurried and bustled on; and the calf's legs again protruded, showing that the hurrying on of the animal frustrated the desire of nature. Perrett thought the whole proceeding so cruel that, having failed to induce Mr. Lewis to put the cow into a stable at Melksham, he followed the poor beast along the road, and repeatedly asked Mr. Lewis to put the cow into this farm and that farm which he passed on the road. Ultimately, about a mile and a quarter from Melksham, he did put the cow into a field; and she at once lay down, and in a very few minutes was delivered of her calf. Now, it should be stated that, this being a heifer, it was her first calf, and therefore labour might have been expected to be more protracted; but in this case it would be seen the heifer was delivered directly she had that rest and quiet which were so

XUM

essential to her. Mr. Bartrum would no doubt say that this was a customary and ordinary case, that it was a matter of necessity, and so forth; but he took it that Mr. Bartrum's knowledge of nature was such that he would have been unwilling to treat an animal as this poor cow had been treated. As he had said, he should call witnesses proving that the cow was seen to be in the act of parturition again and again; and there were many places into which the poor cow could have been put, and people were not so hard-hearted but that they would have afforded, even at some inconvenience to themselves, that assistance which the poor dumb animal needed. Inspector Perrett pointed out to the defendants that the Crown Inn stables were at hand and available, where plenty of room could have been found; and it was moreover the duty of Phillips and Mr. Lewis to have made every inquiry to avoid this gross cruelty. The course which Phillips had taken in endeavouring, seeing the state of the cow, to get her put in at the Bell Inn, and then afterwards driving her on, proved an act of continuous cruelty, and that cruelty Mr. Lewis had not only acquiesced in, but instigated. As to the question whether cruelty was committed or no, common sense and every-day matters told them that a human being or a dumb animal required at such times as these perfect rest and retirement, and not to be hurried along a road, as was done in this case. The scientific evidence which the Society had felt it its duty to call would warrant him in asking the Bench to deal with this case. when made out, in such a manner as to be a warning to drovers, cattle dealers, farmers, and the general public—if such a general warning were needed, and he could hardly conceive that it could be—that such revolting cruelty could not be permitted. Mr. Bartrum might tell them that it was a trivial case, that Perrett was a common policeman and knew nothing of cows, and that the other witnesses were equally ignorant. But it was really a most serious case, and the Society appealed to the Bench to know if these things should be allowed to continue. The Society which he had the honour to represent wished it to be known that there was an institution determined that such acts of cruelty should not be allowed to pass unnoticed; and he asked the Bench, supposing he proved what he had stated, to convict the defendants of the offence with which they were charged.

Mr. Tombs then called the following evidence.

Inspector Perrett said: I am stationed at Melksham, and have been in the force upwards of eighteen years. On the 26th of April (Friday), which was not a Melksham market day, about a quarter before two, I was in my house at the police station, and saw through the window several beasts standing in the market-place. From one of them I saw the legs of a calf protruding some distance. I went out in search of the drovers, and found them standing at the King's Arms opposite. I saw the defendant Phillips and another man drinking from a cup. I asked him who was in charge of the beasts, and pointed out to him that one of the heifers was calving. He could see it, and the calf's legs were protruding at the time. He was standing only about forty yards from the cow. It being Chippenham market day, I surmised that the cattle had been driven from there. Philips told me he was in charge of the cattle, and he had tried to put the heifer into the stable of the Bell Inn, the first inn in Melksham, but that he could not get in, as there was a mare and colt in the stable. He told me he was going to drive the cow about a mile further, to Arter's public-house, and then put it in. I said if he did I should summon him, as it was gross cruelty. Phillips then pointed to Mr. Lewis, who had driven up with Mr. Collett, and said, "That's my master,—you had better speak to him." Mr. Lewis was standing near the King's Arms, and I walked towards him, and he met me. The legs of the calf had then receded. I told Mr. Lewis that the cow had begun calving, and asked him to put it in. He said he was going to drive it on to Arter's,

about a mile further on. I told him there were the spacious stables of the Crown Inn close by, and he could put it in there. Mr. Lewis said he would not put his cow into such a place as that. The stables at the Crown are very roomy and commodious.

Mr. Bartrum.—I will admit they are most eligible.

Witness (continuing): Mr. Lewis then said it would not hurt the cow to drive it on. I said it would be cruelty to do so; and Mr. Collett, who was with Mr. Lewis, denied this, and said he had known cows driven ten miles like that. Mr. Lewis then ordered Phillips to go on, and they proceeded to drive the cow towards Arter's, and I followed. On getting to the turnpike-gate just outside the town, the cow tried to get on the grass on the side of the road, but was driven on. A little further on Mr. Cottle's farm was reached, and I asked him to put the heifer in there, as I was sure Mr. Cottle would give him permission. Mr. Lewis said he did not know them, and should not ask them. About one hundred yards further on we came to Mr. Jones's farm; and I said to Mr. Lewis, "You must know Mr. Jones, for every one knows him,—put the heifer in there." He replied that he would not. Upon that, Mr. Jones came out and offered Mr. Lewis some refreshment, but Mr. Lewis declined it. I then said to Mr. Jones, "You had better let Mr. Lewis put his cow in your yard, as it wanted to calve in the market-place." Mr. Jones said Mr. Lewis was welcome to do so; but he still would not do so. Mr. Lewis then said he did not believe that the cow was calving, and I told him what I and other witnesses had seen. Mr. Lewis again said he did not believe it, and asked Mr. Jones if it was calving; but Mr. Jones said he could not tell at that distance, nor unless he was close to her. Phillips kept the cows moving on, and I saw this heifer try to get into the ditch several times. On one occasion she got her fore-legs into the ditch, and the calf's legs again appeared. About a quarter of a mile beyond Arter's, the calf which was running by the side of the other cow got tired, and the heifer was then put in a field belonging to Mr. Jones on the side of the road. No attempt was made to put the cow in Arter's stable. Mr. Jones had told Mr. Lewis he could put the cow in that field for a week or a fortnight if he thought proper. The heifer was driven into this field, and in a minute or two she lay down, and calved almost directly. The whole affair did not take long. It was about a quarter to two o'clock when I saw the cow in the market-place, and I had got back into Melksham, after the cow had calved, before three. While I was talking to Phillips, near the field where the heifer was put in, a farmer named George Hawkins came up. He said he had heard I had stopped the cow, and if it had been him he would have taken it on to Heddington. He said he saw the cow in the market-place at Chippenham, and thought it would calve. He added that he had driven cows in that state for miles.

Cross-examined by Mr. Bartrum.—Hawkins said in his judgment it would not hurt the cow. Mr. Jones did not tell Mr. Lewis that he thought it would not hurt the cow if it were driven another half-mile. Mr. Jones did not tell Mr. Lewis that he did not like a strange cow in his yard from Chippenham market. Mr. Lewis said he did not like to put a strange cow into Mr. Jones's yard, for fear of the Foot-and-mouth Disease, or something to that effect. Mr. White, my superintendent, took the opinion of Mr. Bazley, the veterinary surgeon in this neighbourhood. I should not have been satisfied if Mr. Lewis had put the cow in at Mr. Jones's. I considered it great cruelty to drive the cow.

William Oatley deposed,—I work for my father, a farrier, of Melksham. On the 26th of April I was standing near the police station. I saw the cow in the road, and it began to calve. First of all some water came from the cow, and then the legs of the calf appeared. I saw Inspector Perrett come

XUM

out of the police station and go over to the King's Arms to the defendant and another drover, and they came back to where the cows were. I, as well as Perrett, told Phillips the cow was calving. They stood there a minute or two till Mr. Lewis came along, by which time the calf had receded. Perrett told Mr. Lewis the cow was calving, and Mr. Lewis said he did not think it was. I then told him I had seen the legs of the calf. Perrett told Mr. Lewis to put the cow in. Mr. Collett was with Mr. Lewis in his trap, and they did not get out of the trap to examine the cow. The cow, with its companion, was then driven away, and I went to work.

P.C. Henry King, stationed at Melksham, deposed,—On the day in question I saw the cows on the Chippenham road about a mile and a half from Melksham, but I then noticed nothing the matter with them. I afterwards saw the two cows with others in the market-place, and saw the legs of the calf protruding from the heifer. I saw the Inspector and the drover go up to the cow together. I was some little distance from the cow when I saw this.

Professor Pritchard was the next witness called, and he deposed, in reply to Mr. Tombs,—I am a professor of the Royal Veterinary College of London, President of the Veterinary Association, and also lecturer on anatomy and diseases of the horse at the College. I have heard the evidence in this case.

Mr. Tombs.—Will you be good enough to give the Bench the benefit of of your scientific experience and evidence as to whether the facts deposed to constitute cruelty or no?

Professor Pritchard.—I have not the slightest doubt that this heifer was in the act of calving; and beyond suffering from the ordinary pains attending labour she was subjected to a considerable amount of cruelty by being driven along the road in that condition. I consider that she should have been put into the Crown stables at the time that she was first noticed to be in labour.

The Chairman (Sir Charles Hobhouse).—I am very ignorant on these matters. I should like to have from the witness some description of the symptoms preceding parturition.

Professor Pritchard.—For some hours, in some instances a day or two, previously, the appearance about the animal's quarters, etc., would be proof positive to an ordinary attendant on cattle—to a cowman, for instance—that she was near parturition.

By Mr. Tombs.—Mr. Lewis must certainly have seen at Chippenham that the cow was near calving.

The learned Professor continued his description of the process of parturition. He said: When the act is about to take place the animal commences to strain in ordinary labour pains; the calf is within a number of membranes in the womb, which contain a quantity of fluid—a provision of nature to prevent the fœtus being injured. In the first attempt to force the fœtus from the womb these membranes burst. In some instances some of the membranes are forced through the passage, so that the water-bag will come into view, but not in all cases. It very frequently happens that the water-bag bursts before any part of the calf is open to view, and then the calf is seen first.

Mr. Tombs.—And that is well known, I suppose, to farmers and drovers?

Professor Pritchard.—Certainly. Any man who knows anything about cows knows that a cow can calve without the water-bag being seen.

In answer to Mr. Heathcote.—I have no doubt—indeed, I am sure—there were symptoms present at Chippenham from which Mr. Lewis must have known that the cow was going to calve.

Mr. Tombs.—If the calf was protruding, there is no doubt that parturition had commenced?

Professor Pritchard.—Undoubtedly. I should be inclined to say that the labour pains had been on for a considerable time; for in normal cases, par-

ticularly in heifers, the pains often exist twelve hours previous to the birth of the calf.

Mr. Tombs.—How should the cow be treated?

Professor Pritchard.—When about to calve she should be put in some covered place with conveniences for her to lie down and make herself comfortable.

Mr. Tombs.—Would it be wise, prudent, or humane, to drive a cow as this was driven after it came to Melksham? Witness.—In my opinion it was a very cruel act indeed to the heifer.

Mr. Heathcote.—Were the pains of labour increased by driving? Witness.—I do not say that. No doubt the animal feels extremely ill under the most favourable circumstances, and she being unable to lie down, doubtless increased the suffering.

Mr. Tombs.—Nature teaches animals to try to make themselves comfortable when in this condition? Witness.—Yes.

Mr. Tombs.—And that would not be by walking along a road? Witness.—Certainly not.

Mr. Tombs.—If it is proved that the cow calved directly she got into the field, what does it show? Witness.—It shows that she would have calved before if she had been allowed.

Mr. Tombs.—Have you any doubt Phillips was guilty of cruelty in driving the cow, and Mr. Lewis in allowing, and in fact ordering it? Witness.—Certainly not.

Cross-examined by Mr. Bartrum.—You have found that farmers are not very well informed upon veterinary surgery—not very intelligent? Witness.—I have found many very intellectual.

Mr. Bartrum.—Not down here in the West, you know? Witness.—Farmers generally are shrewd business men.

Cross-examined.—As a rule the membrane does not protrude until after the act of calving.

Mr. Bartrum.—Do you seriously say that? What do your books say? Witness.—I cannot commit myself to any statement as to what books contain. What I say I know from experience: and I say that, as a rule, the calving commences before the appearance of the membrane.

Mr. Bartrum.—Ah, you see, you come from London; and we in the West are poor benighted people. Witness.—Although I live in London now, I have not always done so. I am the son of a veterinary surgeon with a country practice, and have myself had a large mixed practice.

Mr. Bartrum.—But supposing the farmers in this part of the country—poor ignorant people!—said that the membrane nearly always projected after bursting, before the appearance of the calving, would you say you did not believe them? Witness.—I should.

Mr. Bartrum.—What is the longest time you have known to elapse, in your experience, between the first appearance of the legs and the birth of the calf? Witness.—Perhaps an hour; but then when the legs appear I should always have recourse to assistance. I have never known half a dozen hours to elapse.

Cross-examination continued.—The parturition of a heifer is longer than that of a cow, but it does not continue very long after the protrusion of the feet. I have known the water-bag protrude with the feet in it; but that is not the rule, in my opinion.

Mr. Heathcote.—You say you have known an hour to elapse after the appearance of the feet before the birth of the calf: do you mean that to apply when all is going on right and there is nothing wrong? Witness.—Yes; I can understand that a cow unassisted, or calving in the night, might lie for some hours with the feet protruded.

XUM

Re-examined by Mr. Tombs.—If the feet protruded through the bag, would that be a regular thing or not? Witness.—Oh yes.

Mr. Bartrum.—That would be a natural presentation, would it?

Professor Pritchard.—They are all natural, sir. There is nothing artificial about it.

Mr. Tombs.—If the legs appeared without the water-bag it would show that parturition had commenced? Witness.—Yes, and actively. When the legs protruded it would be the duty of the farmer or some one else to assist the cow.

Professor T. W. Mayer was then called, and in answer to Mr. Tombs said,—I am a Fellow of the Royal College of Veterinary Surgeons, London, a member of the Examining Board on Cattle Pathology, and Professor of Veterinary Surgery at the Agricultural College, Cirencester.

Mr. Tombs.—You have had, I believe, forty-three years' experience at home and abroad? Professor Mayer.—Yes; I have served Her Majesty at home and abroad, but I was in general practice before I did so. I have heard the evidence in this case.

Mr. Tombs.—What is your opinion as to whether or no the facts indicate cruel treatment by the defendants? Professor Mayer.—I have always found that whenever the natural functions of nature are interfered with, an act of cruelty is committed.

Mr. Tombs.—Do you consider nature was interfered with in this case? Professor Mayer.—I do, most unnecessarily and unmercifully.

Examination continued.—It would have been a proper course to pursue to have put the animal into some stable at Melksham. It is necessary and desirable that a cow in this condition should be placed in rest in quiet. It would certainly be most improper to drive her a mile and a quarter, as was done in this case.

Mr. Tombs.—From what you have heard, have you any doubt parturition had commenced? Witness.—None whatever. I should say the labour pains must have been upon the cow for some time. Parturition must have proceeded to a considerable extent for the legs to have protruded. There are always premonitory symptoms of approaching parturition, and as to them I can only repeat what Professor Pritchard has said. I entirely confirm Professor Pritchard's evidence.

By the Bench.—In my judgment the animal felt great suffering, both physically and mentally.

Mr. Bartrum.—Mentally?

Professor Mayer.—Yes. The cow has a brain as well as you and I, only it cannot speak quite so well.

The Bench.—It can bellow.

Cross-examination.—The first parturition, that of a heifer, is always slower than that of a cow.

Mr. Bartrum.—What is the greatest length of time you have known to elapse after the first appearance of the legs and the birth of the calf? Witness.—I have known four or five hours to elapse. Pains would come on before that, of course. But the question you asked me could not possibly apply in this case.

Cross-examination continued.—Labour pains come on with intermissions, and sometimes at considerable intervals.

The Chairman.—When a part of the body of the calf is visible, does it frequently recede? Witness.—Yes, several times, if the cow is not left quiet.

Mr. Heathcote.—Does driving retard parturition or not? Witness.—Partly retards it; for if this heifer had been put in a stable at Melksham, she would have calved there.

Mr. John Woodroffe Hill, examined by Mr. Tombs, said,—I am veterinary

inspector to the borough of Wolverhampton, a Fellow of the Royal College of Veterinary Surgeons, London, and my partner and myself have a large practice. I have heard the evidence in this case, and I consider the defendants have committed a very gross act of cruelty in driving the cow, and thus protracting the labour pains.

Mr. Tombs.—Can you define the kind of cruelty to which the heifer was subjected? Mr. Hill.—The cruelty consists in the immense amount of sympathetic fever induced by the calf being stopped in the passage, and the great strain on the walls of the vagina (a sensitive structure), owing to the retention of the calf. After rupture of the fœtal membranes, air gains access to the uterus, frequently giving rise to putrefaction or metritis; therefore delaying parturition is very dangerous. Driving the animal under the conditions named would render the labour pains weaker.

Examination continued.—It would be decidedly improper to drive a cow after the water-bag had burst, and after the legs of the calf had protruded—very wrong indeed, I think. The cow must necessarily be occasioned considerably more pain. Cows will not calve in a bustle—they always seek quiet and solitude; and to bustle a cow along as this one would be in her condition was very gross cruelty.

Cross-examined.—Any driving would be cruel under such circumstances. I should not expect a cow that had been driven in such a manner to lie down comfortably directly it got into the field. I should expect it was caused by exhaustion and suffering.

Mr. Tombs said that was his case.

Mr. Bartrum then addressed the Bench for the defence. In the course of his address, he contended that this was a subject upon which the farmers of Wiltshire could not be expected to possess complete knowledge, and if, in acting according to his lights, Mr. Lewis had in ignorance caused an act of cruelty to be committed, he could not be convicted. He should prove that Mr. Lewis did not wish to put his cow in an unhealthy public-house stable at the Crown, but that he desired to put her comfortably in a field; and consequently, not knowing Mr. Cottle, he asked and obtained permission to use the field of his old friend Mr. Jones, being unwilling to tax too far Mr. Jones's hospitality by placing in the yard with his other cattle a strange cow from Chippenham market, and which might have been infected with Foot-and-mouth Disease. He therefore submitted that the defendant did the best he could upon the representations made to him by the Inspector—who, however good a constable he was, could know nothing about cattle. He should prove that there were no indications of the cow being about to calve, and no one but the policeman believed that she was about to do so. Indeed, it would be shown that when Mr. Lewis bought the cow at Chippenham market he doubted whether she would calve soon enough for him, and claimed that something of the purchase-money should be returned to him if she did not calve before the 1st of May. It could not therefore be that the defendants took the cow from Chippenham knowing that she was about to calve directly; and when she did show signs they did the best they could for her. He should call Mr. Bazley, and several experienced farmers, who would say that in their opinion a short walk not only did not hurt but rather benefited a cow just before parturition, and if there was any doubt in the case the defendants were entitled to the benefit of it, for in a criminal case like this the charge must be affirmatively proved.

The defendant, Mr. Lewis, was then examined by Mr. Bartrum. He said: I bought the heifer in question, together with another that had a calf by her side, at Chippenham market. I have had large experience in cows, keeping seventy, eighty, and ninety every year. I hesitated in buying the heifer, as I did not think she would calve by the 1st of May, and I was promised an

allowance if she did not calve at the time. I had no idea she would calve so soon. I sent the cows on in the care of Phillips the drover, and some time afterwards I and Mr. Collett drove away towards Melksham. We overtook the cows just before we got into Melksham. I pulled up the horse, and followed behind the cows two or three minutes before passing them. There was no indication then that the heifer was going to calve. I told the drover to be careful with them, and went on. I saw Perrett at the King's Arms, and he told me the heifer was calving, and that the legs of the calf had protruded. I went up to the heifer, examined her, and said I did not believe it. I swear that that was my conscientious belief at that time. Mr. Collett was with me. I had no knowledge as to the water-bag having been ruptured, or any sign whatever. By my directions, Phillips then drove the heifer slowly along the road to Mr. Jones's, and I followed behind in my conveyance. Phillips never struck her. I saw no efforts of the heifer to get into the hedge, and saw no heaving. When we had arrived at Mr. Jones's, he came out and asked me what was the matter. I told him that the policeman said the heifer was calving. The Inspector then said, "Can Mr. Lewis put his heifer in here?" I had not heard him mention anything about the Crown stables, or as to putting the animal in at Mr. Cottle's. Mr. Jones replied, "You shall put her in here if you like." On learning that Mr. Jones had other cattle in his yard, I said I should not like to put the heifer in the yard, because, as I once got the Foot-and-mouth Disease myself from Chippenham market, I did not like to run the risk of inflicting it upon Mr. Jones by putting a strange cow from the market among his cattle. I then took her on to Mr. Jones's field, which he offered me, and put her in. I saw no distress or heaving on the road. Phillips was guilty of nothing like cruelty in my presence. I have found from experience that after the water-bag bursts heifers will be a long time—ten or twelve hours—before calving.

The Chairman.—That is after the protrusion of the calf? Witness.—Yes. They have intervals of heaving, and I have known them to last for hours before calving, and I have driven the cows about a little. They calved much easier for it afterwards.

Mr. Bartrum.—Then, from your judgment and experience, cows calve much easier for being driven about a little? Witness.—They do. Oatley did not tell me the calf's legs had protruded. Only Inspector Perrett told me that. I was inclined to believe Perrett told me a lie, because I did not believe the heifer was calving. I don't know why Perrett should have told me a lie. I suppose he was right.

Mr. Tombs.—Well, I suppose you thought you could bustle him, as he was only a policeman.

Defendant.—I took particular notice of the cows when I overtook them on the Chippenham road, because I had paid a large price for them. We had a conversation about the beasts. I took no particular notice as to whether the heifer was going to calve or no. I noticed no special sign. Why I took notice of the beasts was that it was warm weather, and dangerous for driving cattle. I did not stay at the field till the cow calved. I will swear I saw no sign of the calf's legs protruding at all.

Re-examined.—Considering the sum I gave for the cow, it was not to my interest to drive her severely.

By the Chairman.—It is six or seven miles from Melksham to Heddington, where I was going to drive the cow. I put her in the field owing to what the policeman said.

The Chairman.—But you did not believe the calf had protruded. Why did you put her in the field? Witness.—The Inspector kept on urging it.

The Chairman.—Then did you believe it at last? Witness.—After I put her in the field.

Mr. Joseph Collett, auctioneer and farmer, of Keevil, who was with Mr. Lewis up to the time the cows were driven out of Melksham Market-place, corroborated his evidence. He did not believe there was any cruelty at all.

Cross-examined by Mr. Tombs.—I did not believe Perrett, but I have now found he was right.

Mr. Tombs.—Then although you have always before seen the membrane, you made a mistake this time? Witness.—Yes.

Mr. Tombs.—Suppose, now, that you had believed at the time what Perrett had told you, would you have driven her a mile and a quarter? Witness.—I should have driven her a little way to get her out of the town. I should not have driven her to Heddington.

Mr. Tombs.—Would you not have put her in the Crown stables? Witness.—Sometimes they will not calve in a house, and will calve quicker and better in the open. As I saw the heifer, I should have driven her gently on.

Mr. Tombs.—Simply because you did not believe she was going to calve? Witness.—Yes.

Mr. Ishmael Jones, farmer, of Melksham, said he saw the cows arrive near the King's Arms, and he walked round them to have a look at them. He was sure the water-bag had not then broken, or he must have seen it. He saw no symptoms to lead him to suppose the heifer was about to calve. He then went on home, and shortly afterwards the cows passed his farm, and on going out he saw Mr. Lewis. The cows were too far off for him to tell whether the heifer was calving or no. He corroborated Mr. Lewis's evidence as to what took place between them. The cows were being gently driven. He told Mr. Lewis he was welcome to put the heifer in his yard if he would do so, but that he would rather have her put in the field.

By the Bench.—The field into which the heifer was put was nearly a mile from Melksham, and about two-thirds of a mile from his house.

Cross-examined.—The water-bag must have been ruptured before the legs came out. The membranes protruded before the calf was seen—not in all cases, but usually. He had had long experience, and had never lost a cow in calving. He had heard dealers say that to walk cows about enabled them to calve easier, but he had never done it himself. If he had a cow begin to calve on the road, he should put her into the first place he could get her to.

Mr. James Newman, sen., a retired farmer, of Heddington, gave evidence as to his experience. He had driven cows just before they calved, so as to get them near the house so that they could be attended to.

Cross-examined.—He should not take a cow a mile and a half for a "trot out." He had driven them some distance, but that was to get them to a suitable place on the farm.

Mr. Bazley, M.R.C.V.S.L., said he practised in that part of the country, and resided near Melksham. His opinion of this case was asked by Mr. Supt. White. He had heard what had been stated as to this cow.

Mr. Bartrum.—What is your experience, now, as to the membrane? Witness.—In ninety-nine cases out of a hundred of natural presentation, there would be some of the membrane visible.

Mr. Bartrum.—And your books confirm your experience? Witness.—You cannot get much from books. From what I have heard of the evidence, it seems to me that the cow first showed symptoms of calving in the market-place when standing in a composed state; that at the turnpike gate, while she again stood still for the toll to be taken, the water-bag broke. It was possible no membrane might have been seen. I was informed that the heifer showed no signs of calving from the turnpike gate to the field, and that she lay in the field for a considerable time before calving. This was a natural presentation, and I should like to show the Bench some diagrams——

XUM

The Chairman thought the Bench agreed with the witness that nothing could be got from books, and would be content with oral evidence.

Cross-examined.—He understood Oatley to say that he saw the water at the turnpike gate. The water-bag must have been broken before the legs could be seen. The gentlemen who had given evidence for the defence were not all customers of his. Mr. Supt. White saw him and asked his opinion, describing the case similarly to the manner in which Perrett had described it. He told Mr. White that his opinion was this,—that if the calf was forward in the passage as he described for some distance, it would cause a considerable amount of pain, and would amount to cruelty. If there was such a presentation as had been spoken of by Perrett, it would be cruelty.

Re-examined.—He had heard of the feet of the calf being seen through the membrane.

Mr. Gerrish, dealer, of Southwick, near Trowbridge, said he sold these heifers to Mr. Lewis at Chippenham market. Mr. Lewis thought this heifer would not calve soon enough for him, but he said he thought she would calve the next week. Mr. Lewis said he should want some allowance if she did not calve before the 1st of May. He had no idea the heifer would calve that day.

Cross-examined.—He bought the heifer of Mr. Gough. He did not know when she was due to calve.

This being the whole of the evidence, Mr. Tombs asked leave to reply, as it was allowed by some magistrates.

Mr. Bartrum objected under Jervis's Act, and the Bench declined the reply.

Mr. Tombs said his case was so strong that he left it in the hands of the Bench with perfect confidence.

The Bench retired, and after ten minutes' absence they returned into court, and the Chairman said,—We think on the evidence that in the act of driving this particular heifer in the state in which it has been described from Melksham to the field in which she afterwards brought forth her calf, there was cruelty on the part of both the drover and Mr. Lewis—the drover in actually driving, and Mr. Lewis in following it, in ordering it, and in fact in taking part in it. This being so, we think we cannot do less, understanding as we do that both cases are before us, than inflict a fine of £1 and costs on Mr. Lewis, and a fine of 10*s.* on the drover; considering, of course, that the drover being an ignorant man and in the service of Mr. Lewis, was merely carrying out Mr. Lewis's orders, improper as those orders were.

Mr. Tombs applied for the solicitor's fee, and the expenses of the professional witnesses.

The Chairman said the costs of solicitor and witnesses would follow.

Mr. Tombs said the Society felt called upon to contest this case, and knowing that Mr. Bazley would be prejudiced if he was called upon to give evidence against his customers, they obtained the best professional evidence that could be procured. He was entirely in the hands of the Bench.

The Chairman said they should allow the solicitor's fee £1 1*s.*; each of the professional witnesses 10*s.* 6*d.*; and 2*s.* 6*d.* to the witness Oatley.

The costs and the fines in the whole amounted to £5 4*s.*

Obituary.

THE death has been reported of W. Farrow, M.R.C.V.S., of London. He graduated in 1830. The death has also been announced of D. H. Tombs, M.R.C.V.S., of Barford, Gloucester, who graduated so recently as 1871.

Notes and News.

THE BERLIN VETERINARY SCHOOL.—It gives us very great pleasure to announce that Mr. Frank S. Billings, one of our valued correspondents, has passed a most successful examination at the Berlin Veterinary School, where he has been studying for the past three years. On arrival in the Prussian capital, Mr. Billings could neither read nor write, nor even speak the German language. In July last, after as severe an examination as is imposed upon Prussian students, he obtained the diploma from the Minister of Agriculture, certifying that he had satisfied the Examining Board, who added the words "very good" (*sehr gut*) to their testimony. This is most creditable to Mr. Billings; and Massachusetts and Boston may be proud of claiming the first American who has graduated in a Continental veterinary school—and that one of the best in Europe. Our colleague purposes studying under the distinguished Virchow and Schütz (of the Berlin Veterinary School) during the winter, after which he intends passing to the French veterinary schools—probably to Lyons, to profit by the teaching of Chauveau. On his return to America he will study for the M.D. degree at Harvard University, upon obtaining which he will commence his career as a veterinary teacher. From his thorough scientific training in the best schools, his indomitable perseverance and enthusiasm, as well as devotion to veterinary medicine, we anticipate a brilliant future for Mr. Billings, whose presence and exertions in his native country will give a great stimulus to our profession there, and will doubtless benefit the United States very largely.

AMERICAN PORK.—It is stated on the authority of the *Deutsche Fleischer-Zeitung* that two butchers, in a large way of business at Cologne, have gone over to America with the intention of buying up there and bringing over for home consumption a cargo of two thousand pigs. Their calculations are said to be based on the assumption that the current price on large transactions ranges from 1½*d.* to 1¾*d.* per lb. live weight, at which figure there is room for a handsome margin of profit, after making liberal allowance for all the heavy expenses and risks beyond the mere purchase of the "raw material." Our contemporary is, however, inclined to doubt the wisdom of the speculation, owing to the apparent omission of one important element in the enterprising butchers' calculations. It is now an established fact that American pork is far less free from trichinæ than the flesh of native pigs; popular prejudice runs high against it, and the official inspections of the meat are now so rigorously and systematically carried out that there is very little chance of any of it finding its way into consumption if not altogether above suspicion, as has previously happened with consignments from America on more than one occasion.

SWINE PLAGUE IN AMERICA.—The United States Commissioner of Agriculture has laid before Congress a report on the disease known as "Hog Cholera"; and the report gives, also, some information respecting diseases to which all classes of domestic animals are subject. According to a tabular statement compiled from information received from 1100 counties, the annual losses among all classes of domestic animals from various diseases, represents nearly 17,000,000. As this statement is based on returns from only half the country, it is suggested that the annual loss from this cause may be placed at 30,000,000.

A CURE FOR WOOL-EATING IN SHEEP.—A correspondent of a foreign journal asserts that he cured a flock of the bad habit of eating wool, by strewing chalk, mixed with salt, upon the fodder laid before the sheep. The cure was effected in less than a fortnight.

SPURIOUS TITLES.—There appears to be a strange tendency in some people to wear borrowed plumes, and palm them off as their own. The *New York Spirit of the Times* boasts of a "Horse Doctor" on its editorial staff, and this gentleman—whose name we cannot find in the Register of the Royal College of Veterinary Surgeons, but which appears at the head of his own special column in the above-mentioned paper—appends to it the mystic letters M.R.C.V.S.,E. Among the correspondents who write for advice as to the treatment of their animals, there is one "H. H. F.," who seems to have been rather fascinated by the formidable array of letters attached to the doctor's name, and in desiring to be informed as to European veterinary schools, expresses his anxiety to know the meaning of the letters. The annexed cutting from the column in question gives the questions and answers :—

"H. H. F., New York.—1. Please state which of the European colleges you would recommend me to study at. 2. What the letters after your name over the veterinary column mean? *Answer.*—1. It would be making an invidious distinction to select one in preference to the rest; they are all excellent institutions. We are naturally partial to the Royal College of Veterinary Surgeons, Edinburgh, but do not claim for it any particular excellence not belonging to the others. 2. The letters in question, M.R.C.V.S.,E., mean Member Royal College Veterinary Surgeons, Edinburgh. The institution in question is called the Edinburgh Royal Veterinary College. Some people, more captious than well-informed, are sometimes idiotic enough to pervert the meaning of these initial letters, and make it read Member Royal College of Veterinary Surgeons, England.—which would be incorrect, as, were that the impression intended to be conveyed, we should write M.R.C.V.S.,L., the final letter standing for London, whereas the final *e* legitimately stands for Edinburgh."

We feel sure that the editor-in-chief of the "Spirit" will thank us for enlightening him and his readers as to the incorrectness of these statements. There is no Royal College of Veterinary Surgeons, Edinburgh; therefore the letters M.R.C.V.S.,E. are a fiction. Neither is there a Royal College of Veterinary Surgeons for London, or England: there is only *one* Royal College of Veterinary Surgeons, for Great Britain and Ireland. Honest men may sometimes be "idiotic," and "more captious than well-informed," but in such cases as this they are perfectly sane, and are justified in protesting against attempts at deception. Good wine needs no bush, and the adoption of titles to which there is no legitimate claim, or which are surreptitious, can only lead to one conclusion.

THE URINE IN RABIES.—Professor Robin, of Paris, has recently had occasion to analyse the urine of a patient suffering from Rabies. It presented the following characteristics: Diminution in quantity, abnormal density, very marked acidity, abundance of uric acid, diminution of urea and urates. On evaporation, he found crystals of hippurite of lime, margaric acid, leucine, and an enormous quantity of uric acid. The urine also contained bacteria of a special character.

VARIOLA IN PIGS.—In many localities in the Hernals and Baden districts, Small-pox has broken out in a most virulent form among swine of Hungarian origin imported from Oedenburg, and has in some cases been communicated to herds of the local breeds, the mortality in both instances being unusually great. The conditions attending the appearance, course, and termination of the disease are precisely analogous to those which obtain in Sheep-pox, and the police and sanitary regulations applicable to the latter are being strictly enforced, so far as is practicable, in the present outbreak.—*The Farmer.*

DISEASE AMONG BUFFALOES IN AMERICA.—It is reported that the buffaloes are dying by thousands on the American prairies of some mysterious disease; and *The Echo* says that it is "apparently Rinderpest or some malady akin to it."

BRUTALITY IN SPAIN.—During the first series of bull fights at Madrid this year, 90 of those animals and 143 horses were killed.

VERMONT UNIVERSITY.—The University of Vermont has conferred on Prof. Noah Cressy, M.D., V.S., of Amherst, Mass., the honorary degree of Doctor of Philosophy (Ph.D.), in recognition of the valuable services he has rendered the College by his popular lectures over the State, and in thus elevating the standard of the veterinary calling among the farmers generally.

DOG DISEASE IN CALIFORNIA.—According to *The Echo*, the dogs in California have been seized with a strange affection. The disease is very sudden in its attacks. The dogs affected show no signs in advance of anything being wrong with them, but are suddenly seized with a desire to run round in a circle and howl. This generally continues for ten or fifteen minutes, after which they give several leaps and spasmodic twitches, and then fall dead. An examination of the mouth of the animal always shows that the tongue has turned black, but there are no signs of frothing or other symptoms of Hydrophobia; consequently it must be ascribed to some other cause.

RABIES AND HYDROPHOBIA.—An edict has been issued in Norway, prohibiting the admission of dogs from Great Britain and Ireland, as well as Germany and Finland—countries in which Rabies is prevalent. A more recent circular forbids the captains of ships from the ports of any of these countries allowing dogs which they may have on board to go on shore. The third supplement to the "Prussian Official Agricultural Handbook" for 1876, which has just been published, gives the following particulars respecting rabid animals destroyed within the limits of the monarchy in the twelve months ending April 1, 1877. By far the greater number of dogs there killed were in the province of Prussia proper, next to which comes Silesia and the Rhine provinces in the order named. Eight persons are reported to have died from Hydrophobia consequent on the bites of mad dogs—one of whom, a veterinary surgeon, committed suicide as soon as the premonitory symptoms had placed the nature of his illness beyond a doubt. The number of animals destroyed on account of Rabies, or suspected Rabies, included 521 dogs, 9 horses, 139 oxen, 27 sheep, and 24 swine; of which 103 dogs, 6 horses, 71 oxen, 9 sheep, and 16 swine were in the province of Prussia. In the course of the same year 119 ownerless dogs were destroyed in accordance with existing police regulations. The London newspapers report that John Nunn, a hay carter, has died in Ongar Union-house, Essex, from Hydrophobia. He was bitten as long ago as May, 1874, by the same dog which bit Mr. Brown, a veterinary assistant, of Stamford Rivers, whose death we noticed about twelve months ago as having occurred three years after the bite.

ANTHRAX AMONG HORSES IN AUSTRALIA.—A disease among horses is reported by the Melbourne press as having been very prevalent lately in the Kyneton, Carlsruhe, Woodend, Romsey, and other districts of that neighbourhood. Several cases are reported in and around Kyneton, but it seems to be most prevalent at Woodend—nearly every farmer in that locality having suffered by the disease. One informant, who has noted the symptoms of the disease, states that the animals when walking appear all right, but if they go any faster stumble and trip up the hind-feet, apparently losing control of the back sinews of their legs. Swelling sets in and extends up the leg, and the animal sometimes dies, sometimes recovers. Another, who has five horses ill and a foal dead, states also that the disease is not very apparent when the horses are walking, but when they start to run their legs twist and they fall. Graham Mitchell, F.R.C.V.S, who has investigated the malady, pronounces it to be Anthrax.

XUM

Correspondence, etc.

BORROWED PLUMES.

To the Editor of the VETERINARY JOURNAL.

SIR,—In view of a recent and particular instance occurring in this city, in which I deem the principles of truth and honour, which should govern the conduct of veterinary practitioners in their relations to society and to each other, have suffered, and still suffer, a most shameful violation, and the offender having sought to justify his wrong position, instead of abandoning it, and there being no tribunal in this country to appeal to but that of *public opinion*, and in furtherance of public and professional honour and probity in the matter of titles, I make the special and particular request that you will answer the enclosed series of questions, either categorically or in any other manner that you may deem best suited for publication in the *Veterinary Journal* and the journals of this city. The special reasons which prompt this request are the following :—A Mr. J. A. Going, who was a pupil at the Edinburgh Veterinary College in 1868, and whose sole diploma is the certificate of the Highland and Agricultural Society of Scotland, has for the last three years used the letters M.R.C.V.S.E., as a suffix to his name in his business advertisements and cards. When asked for an explanation of the meaning of these letters, his reply is that they stand for Member of the Royal College of Veterinary Surgeons of Edinburgh. He has also stated in a witness-box, under oath, that this was their true meaning ; and upon being questioned as to the *locale* of this College, gave it as Clyde Street, Edinburgh. He further stated that such College in Clyde Street examined pupils and granted *diplomas proper*, that he was a member of such College, and that at the time he obtained his diploma Professor Williams was Principal of the Royal College of Veterinary Surgeons of Edinburgh. Being myself a M.R.C.V.S., I thought I knew something of the truth of the matter which was the subject of Mr. Going's testimony. I had never heard of such a college except from Mr. Going's statements, and I did not believe in its existence. I therefore challenged Mr. Going to prove the truth of his statements, by documentary or other irrefragable evidence. My challenge has not been accepted ; but his friends have denounced me as a libeller and traducer, and talk of a prosecution for libel. To threats of this nature I am not disposed to submit.

The sale of worm powders and condition powders, and that of various trashy literary matters, have been largely fostered and stimulated by the most astounding effrontery of iteration and reiteration of the genuineness of Mr. Going's credentials—whispers to the contrary having been heard from time to time—as a guarantee for the excellence of his powders, the value of his literary productions, etc. When Mr. Going swore to the true and genuine character of his credentials, I thought the climax of audacity and deception had been reached ; and I felt determined, no matter what the consequences to myself might be, that the state of things it was designed to cover should no longer be sanctioned by my silence.

I ask you, therefore, in the name of truth and of public and professional honesty, to aid me in putting a stop to, or in imposing a check upon, practices which are as subversive of the best interests of the profession as they are dishonest to the public at large, who are being deliberately and systematically deceived and swindled by means of these counterfeit credentials.

Communications have also been made, similar to the foregoing, to the Editor of the *Veterinarian*, and also to the Principals of all the teaching

colleges, with the view of obtaining an authoritative expression of opinion or statement of facts that will set Mr. Going's pretensions in their proper light, and that will be regarded here as official and unquestionable.

Yours very respectfully,

JOSEPH B. COLEMAN, M.R.C.V.S.

25, Lexington Avenue, New York,
July 23, 1878.

1. Does the possession of a certificate from the Highland and Agricultural Society of Scotland entitle its possessor to append to his name, for professional purposes, the capital letters M.R.C.V.S.E.?

[*Certainly not.*—ED. V. J.]

2. Is there any college in Edinburgh whose proper designation is that of Royal College of Veterinary Surgeons of Edinburgh?

[*There is no such college.*—ED. V. J.]

3. Can the College in Clyde Street, Edinburgh, commonly known as the Edinburgh or Dick's Veterinary College, be properly called the Royal College of Veterinary Surgeons of Edinburgh?

[*The Edinburgh Veterinary College cannot be so designated, and has never been so designated except in this instance.*—ED. V. J.]

4. Does the possession of a Latin document, emanating from the Edinburgh Veterinary College, or a Society in connection with it, headed "Medica Societas Collegia Regii Veterinarii Civitatis Edinensis," entitle its possessor to call himself a Member of the Royal College of Veterinary Surgeons of Edinburgh?

[*It does not, the Society referred to being merely a students' society, and there being no Royal College of Veterinary Surgeons of Edinburgh.*—ED. V. J.]

5. Does the Latin document referred to in the last question emanate from the *College proper*, or from a medical society in connection with it?

[*It emanates from the Students' Society in connection with the teaching school.*—ED. V. J.]

6. Can any pupil of the Edinburgh Veterinary College, being neither a member of its board of directors nor a member of its faculty, justly describe himself as a *member* of that College?

[*He may be a graduate of the Edinburgh Veterinary College, but certainly cannot be a member, as it is merely a teaching school, and does not confer degrees.*—ED. V. J.]

7. Whether does the Highland and Agricultural Society of Scotland, or the faculty of the Edinburgh Veterinary College, independent of the former Society, finally examine pupils and grant diplomas or certificates?

[*The Highland and Agricultural Society alone grants certificates—not diplomas. The School has no examining board.*—ED. V. J.]

8. Will the mere fact of being a *member* of a medical society in connection with the College entitle a graduate to call himself a *member* of the College itself?

[*Certainly not.*—ED. V. J.]

9. Has there ever existed a Royal College of Veterinary Surgeons of Edinburgh which has become defunct?

[*No such college ever existed.* We refer our correspondent to "Notes and News," in the present Journal, for further notice of this discreditable business. —ED V. J.]

XUM

THE HUMANE SLAUGHTER OF HORSES.

To the Editor of the VETERINARY JOURNAL.

SIR,—I notice with pleasure the pertinent remarks of Mr. Lambert and yourself, in the last two numbers of the Journal, in reference to the destruction of horses, and can fully endorse them; but I am rather surprised that no mention has been made of the Bruneau method of slaughter, which, in my opinion, is second to none, and equalled only by shooting. Having been provided by the Secretary of the Glasgow Society for the Prevention of Cruelty to Animals with a Bruneau mask and bolt, for the purpose of testing its efficiency in the slaughtering of cattle, I determined upon trying it also in the destruction of horses, and the result has far exceeded my most sanguine expectations. The last horse (16½ hands high, seven years old, and in good condition) I had destroyed with it, fell on his knees, rolled on to his side, and died instantaneously, with the loss of only a few drops of blood—a great desideratum in street slaughtering.

Every veterinary surgeon in large practice—especially town—should provide himself with a mask and bolt; a mallet is easily obtained, or a smith's hand or sledge hammer may be substituted. Even in the absence of the mask and bolt, it is an easy matter to get a trocar-pointed steel bolt, about five or six inches long and an inch in diameter, made at any smith's in the course of fifteen or twenty minutes. The eyes of the horse can be blinded with a pocket-handkerchief, and the bolt held in position by the aid of a pair of blacksmith's tongs or a piece of iron wire, or a tough stick twisted round its neck.

I am, etc.,

THOMAS WALLEY,
Principal of the Edinburgh Veterinary College.

Edinburgh, *August 5th*, 1878.

DOCKING HORSES' TAILS.

To the Editor of the VETERINARY JOURNAL.

SIR,—Now that the subject of docking horses' tails has been brought before your readers in last month's *Journal*, perhaps I may be permitted to say a few words regarding it: not, however, with the object of upholding the practice, but in the hope of saving some poor horses from the barbarous hot iron now commonly in use in the operation. Doubtless, the majority of the profession set their faces against it as far as possible; but years will be required before the fancy dies out, and now that lately it has again become fashionable, it is not confined to nags, but cart-horses are being also subjected to the operation.

Let me suggest a method to those who may still be required to perform this amputation. Instead of the hot iron and resin being applied to stop the bleeding, I have used for several years a stiff pledget of tow saturated with carbolized oil (1 to 8), large enough to cover the cut surface of the tail, and supported against the bleeding vessels by the hair being brought over and tied immediately underneath. It will be found advisable to fasten the ends of the cord two or three inches above, to prevent it slipping with the movement of the tail. The ligature may be cut off in six or eight hours, and the tow allowed to drop off spontaneously.

I beg to remain, Sir,

Yours respectfully,

ROBERT PATERSON, M.R.C.V.S.

Downham, Norfolk, *August 14th*, 1878.

THE FELLOWSHIP DEGREE.

To the Editor of the VETERINARY JOURNAL.

SIR,—Perhaps a few remarks on the new degree of Fellow of the Royal College of Veterinary Surgeons will not be out of place in your *Journal*, or uninteresting to your readers—especially to those who of late have spent time and money, have passed through the ordeal of an examination, and have been raised to the higher degree of Fellow. As all your readers are aware, I am one of those who have been admitted by examination to that degree; therefore some, no doubt, will put me down as an aggrieved one,—and rightly so. Firstly, I may state that I feel proud of the degree, and do not for one moment grudge either time or money in the obtainment of it; at the same time, I think it ought to do something for me, and for every other Fellow, in return. I think that the public should have a knowledge of what the degree really is, and why and by whom it was given to the profession. It is a fact that gentlemen of education know or care so little about veterinary honours or titles, that in the provinces a great many are only just beginning to rub the film off their eyes, and discover that there is a difference between "Mr. A., M.R.C.V.S.," and "Mr. B., Farrier, etc."; but in provincial towns they fail to discover the difference in degree between M.R.C.V.S. and F.R.C.V.S. Of course, the time is young at present; but there are certain things which might be prevented if a word of warning were given at once from the proper quarter. Also it seems strange to me that judges and barristers in Her Majesty's law courts should pay so little attention to the titles of veterinary witnesses,—often the evidence of the non-qualified practitioner being listened to (especially if he be a horsey gentleman) with more attention than that of a duly qualified member of the profession. Some may say it is more or less our own fault. I, for one, am willing to take a share of the blame due to causes too numerous to mention; but I think that some rests with a Government which pays so little attention to our interests. I thoroughly believe in educating the veterinary surgeon to the highest point possible compatible with practical efficiency. A veterinary surgeon, to take his proper standing in a social point of view, must be a well read and educated gentleman; while, to assume his position as a competent veterinary surgeon, he must be a practical one, and that will only be gained by being practically educated when young,—in other words, he must serve an apprenticeship. I have diverged from my starting-point a little; but we who have our daily bread to earn before we eat it have not much time for writing, and when an idea enters into our heads we must pen it. To return: one of the things I would have enforced is that members should not be allowed to use the certificate of Fellow of the Veterinary Medical Association, which is attached to the College in Camden Town, in such a manner as to mislead the public or encroach upon the higher title of their brethren.

I am, Sir, yours truly,

Norwich, *July 24th*, 1878. A. H. SANTY, F.R.C.V.S.

OUR PRESENT STATE.

To the Editor of the VETERINARY JOURNAL.

SIR,—The nebulous condition of the veterinary horizon having now passed away, and the sun of a bright future been promised us, how deeply grateful we should feel to those who have worked out such a blessing! Only let us for a moment imagine all the vindictive antagonistic feeling exhibited for so many years between the St. Pancras and Dick's Schools having, or likely soon to

XUM

have become, a thing of the past, and the R.C.V.S. becoming the sole licensing body of the profession. And how has all this been brought about? Why, solely or mainly through the indefatigable exertions of our gallant President to achieve this; and though some concessions had to be made, yet I think every member will be delighted with the result. And the sequel that will eventually follow will be the obtainment of the Penal Clause. Upon payment of a registration fee of one guinea, the holders of the Highland and Agricultural Society's certificate will be registered in the list as members of the profession, and hereafter and henceforth all will be examined by the board appointed by the Body Corporate; and although "croakers" may be found, still the only way out of our trouble was thus to act. And truly it must be admitted that many, indeed most, of these certificated men, are good general practitioners in the strict meaning of the term; and this is far more than can be said of most graduates from the St. Pancras College. And the cause of all this is patent; for all (I think I may safely assert "all") of the certificated men are those who have passed their initiation as entered apprentices, which is the *only road whereby to obtain a thorough knowledge* of any craft. I am downright positive on this, and trust that the eyes of the Governors and Council of the London School may be opened to perceive it; then the rule will obtain, and the practical examination with them prove a reality, no longer a farce. To state the case in a plain form: Who is there who will affirm that any college curriculum can, will, or does make veterinary surgeons out of the young men entering as students, and who may have passed their youth as clerks, linen-drapers' assistants, barmen, riding masters' assistants, pursers, private soldiers, etc., etc., *ad nauseam?*

We may be told that the graduate can obtain (I might say *must*) practical knowledge after he leaves his college. My answer is—Then let him obtain it ere he receives his diploma; let him have his practical examination after he has seen his *practice*. Surely it cannot be just to the public to palm these young men off as qualified to practise. They will not be received in the army; there the examination in practice is real, genuine, and satisfactory; before entering the army, they must possess sound practical knowledge and tact.

We may be reminded of the maxim of Lord Bacon, "Principles before practice"; and the fact that on perusing certain works on agriculture he burnt them in disgust, stating they were worthless because they contained no principles. But our profession is an exception to general rules; it is a most difficult, intricate study, requiring an inordinate amount of common sense; and unless a sound knowledge of the animal kingdom be *possessed*, how is a knowledge of the habits of animals in health to be *obtained?* Can it be acquired without being associated with them? And without such knowledge how is it to be expected that a graduate can diagnose deviations from health?

Take cattle, for example. For some years not an ox, a cow, or a sheep has passed within the college walls of St. Pancras. How, then, can such students as above be expected to know anything about them? Will book-learning, and half a dozen dry lectures on "Grinding of Teeth," "Heaving of Flank," "Shortness of Breath," "Exudation from Inner Canthus of the Eyes," "Saliva dribbling from Angles of the Mouth," etc., etc.—will this suffice? I trow not. Yet these newly-fledged ones receive cattle inspectorship appointments.

Then, again, that most important of all subjects—the structure of the foot, and application of the necessary iron fetter, the shoe. How is it possible to acquire a sound knowledge thereof outside the broad field of practical observation? and how important it is that the graduate should be well up on the foot and shoeing, if he intends practising in a large town or entering the army!

Why, sir, the entered apprentice clause is too important to be lightly passed over.

It certainly is high time we turned out real and genuine practitioners. It is not for me to point out those on whom the responsibility rests; but one duty I owe—and that is, as an adult fully developed practitioner, to indicate errors and fallacies known unto me which tend to impede us as a body, prevent our obtaining our status in public esteem, and then leave those holding the reins to drive in the right course.

There was a strong letter in the *Veterinary Journal* for July, signed "Provincial Practitioner," exposing a sad state of affairs at St. Pancras. Some explanation and improvement should emanate therefrom.

On the educational question, just a word. French being now obligatory, it would have been an excellent idea if "good" English had been made obligatory also. I formed my idea after perusing compositions in the form of letters from recent students; but matters may mend with time, so to its influence we will leave them.

One other subject before I close. Members seem indifferent about the Fellowship Degree, or surely more would have dared to front the examiners. We must have a fair number of good men—scientific and practical combined fitly—to pass the ordeal in a manner satisfactory and creditable after a few months' *brush up*. Such reticence should not obtain without some legitimate cause; and it appears to me, from what I glean in my travels, the advantage to be derived from the Fellowship Degree is not apparent. The public know nothing about it; jealousy already exists to an alarming extent among members: so that, should a Fellow endeavour to practise as Consulting V.S., it is doubtful whether success would attend; for not only has he these professional jealousies to contend with, but he will find the Professors down upon him should he dare appear in Court, or as consulting referee. Who of these will submit to being mulcted out of old and privileged perquisites? If I were a Professor I would not stand it myself.

However, some kind of advantage, inducement, and improved professional standing must be developed, ere we have really good men (none other are eligible) sacrificing their comfort, time and money for that simple letter F., which makes a distinction without a difference as matters now stand. Happy thought: the "Fellows" might purchase the Professors' out-door practice, or that part thereof pertaining to the law courts, Agricultural Hall, cattle show, etc.—not *the scientific* investigation department, certainly not; but it never will be done—never!

It is to be earnestly hoped, now that the practitioners are mixed together properly, that they will hold, and then, when ordered to charge, will obey *instanter*, and clear the field of quacks, empirics, charlatans, and all parasites of the like annoying kind. I am, yours obediently,

"ARTEMUS SECUNDUS."

P.S.—Although I have not alluded to the Scotch schools, I doubt not they will bear reformation and advancement; but hearsay evidence is not admissible, therefore I have not mentioned them, though I may refer to them on a future occasion, after ocular demonstration thereof.

TYPHOID FEVER AT EAGLEY.

To the Editor of the VETERINARY JOURNAL.

SIR,—In my reply to the letter of Messrs. Taylor, Greaves, and Locke, in your issue for July, I intend to be brief and to the point, simply confining

myself to a refutation and denial of the assertions made therein, and a statement of facts strengthening and supporting that refutation.

There is no questioning the fact that these three gentlemen came down, at my suggestion, to examine and report upon the condition of a certain cow; that they did this, and exceeded their province by attempting an investigation into the cause of an epidemic of Enteric Fever, then prevalent, which had been previously proved to have been caused by drinking milk containing some noxious material, supplied from the farm of the proprietor of this suspected cow; and that they sent in a report to the Chairman of the Local Board, containing a recommendation that the supply of milk from the farm should be discontinued. All these things, I admit, are perfectly true—the question at issue being, to whom is due the priority in the discovery of the cause, and who first inderdicted the sale of milk from the Hardman's Farm? Now, I strongly deny the claim of Messrs. Taylor, Greaves, and Locke, and as strongly and pertinaciously assert my own. In my letter in your *Journal* for April, I produced sufficient evidence, supported by facts and dates, to convince any unbiassed persons of the truth of my assertion that, in point of time, I was the first to discover the cause of the epidemic, and that the stoppage of the supply of milk was due, not to Messrs. Taylor, Greaves, and Locke, but to the action of the people themselves, who refused to receive it after the second day of the Fever appearing. To that letter these gentlemen by way of reply simply press into their service some absurd dialogues said to have taken place on the occasion of their visit, which I emphatically deny, and attempt to strengthen their position by appending certain certificates, which I will presently show were obtained in anything but a straightforward manner, and are in the main untrue, and therefore are unreliable and worthless.

That the milk from the one cow in question was not wholesome, I have abundant proof: first, the expression of Mrs. K.'s brother; secondly, the report of Dr. Sergeant, to whom I submitted a sample of the milk; thirdly, the test made by my son on his own person; and fourthly, the evidence of my own senses. All these things were mentioned in my report to the Board, and in my letter to you in the April number, and have not been contradicted by Messrs. Greaves, Taylor, and Locke.

As to their assertion that they first pointed to the water on the farm as being the cause of the epidemic, I have evidence, both direct and collateral, to prove the contrary. The stream running past Mrs. K.'s farm was traced as far as the pollution on its banks by myself, my son, and Dr. Sergeant, accompanied by the nuisance inspector, three days previous to the visit of the veterinary surgeons, and we then agreed that this water must be at the root of the evil. Mrs. K. and her servants at first denied that this water was used for dairy purposes, as they knew it to be bad; but subsequently admitted that the milk-cans were occasionally washed out with it.

Again, a sample of this water was collected on the 7th and forwarded to Dr. Sergeant on the 8th for analysis, whose report is in my possession; thus proving that attention was directed to the water prior to the visit of Messrs. Taylor, Greaves, and Locke. If this be true—which I assert it is, and can be substantiated by letters in my possession—I fully establish my claim, and totally destroy the contention raised by these gentlemen.

Appended to their letter are certain certificates which on the surface appear to corroborate the statements made in the body of the letter, but which will, when examined and placed in their true light, not only discredit themselves, but also the structure they are intended to support.

I will first take that of Mr. Cosgrave, in which he says he attended Mrs. K., whose death was caused by Enteric Fever brought on by drinking polluted water used on the farm. Now my son, for the first few days of her

illness, attended Mrs. K., and was only dismissed by her on account of his connection with the investigation into the cause of the epidemic, which she said was ruining her; and she distinctly told him *that she never drank any water from the stream*, but that, for *their own use*, it was fetched from a pump some distance away, as *she knew* the other water was not fit to drink.

As to Mr. Cosgrave's latter statement—that several cases of Typhoid were attended by him in Turton, about the same time—it is simply irrelevant to the question at issue, and of no value whatever as evidence in this controversy, and can only be intended to mislead. Turton is a very wide district, extending perhaps four or five miles in every direction; and to say that cases of Fever were prevalent "in Turton" is indefinite in the extreme, yet nevertheless may be quite true, and still not be in connection, immediate or remote, with any particular epidemic, as in this case. These cases mentioned by Mr. Cosgrave were at a distance of at least two miles from the scene of the Eagley epidemic, and at no time were they ever associated with it.

The manner in which the certificate, said to be *given* by Mr. Hoyle, nuisance inspector, was obtained, is not creditable to the person obtaining it, and at the same time discredits the cause for which it was obtained; the mode of procedure being the following, as related to me by Mr. Hoyle in a letter which I enclose for insertion:—A gentleman calls at Mr. Hoyle's house, and not finding him at home, waits three hours. Ultimately he goes to the railway station, and there meets Mr. Hoyle, to whom he presents a form, already drawn up, and requests his signature; it is hurriedly read over, and Mr. Hoyle, not considering it of much importance, being influenced by Mr. Greaves saying it was "just a little pamphlet' he was getting up and he wanted his signature, in the flurry of the moment signed without a further thought. Ultimately he found out the real object, and wrote to me correcting the assertions he then signed. Perhaps Mr. Greaves may remember Mr. Hoyle saying, "You did not exactly stop the sale of the milk, but I don't suppose that much matters." This certificate was ready drawn up by Mr. Greaves, and was in such a form as to just suit the case for which he required it, and was not, as might be understood by most persons reading it, a free and uninfluenced emanation from the pen of Mr. Hoyle. Further comment is needless.

In the last certificate, from Henry Kershaw—also drawn up, I presume, by Mr. Greaves—is a statement that he drank the milk from the suspected cow, and never felt any ill effects from it. Now, if he did drink this milk, it certainly proves a great deal in my favour, that the milk from this cow was unwholesome; for he certainly was ill, and was attended by my son on February 4th, 1876, two days after the epidemic broke out, when he suffered from Intestinal Catarrh, the result of some noxious article of diet,—most probably this milk, as two of his sisters were also unwell in a similar manner at the same time. I have dates and entries proving this, which I would show Mr. Greaves if he so desired.

Finally, I must fortify my position by impressing upon you that the nature of the disease being proved at the time to be Enteric Fever, it would be absurd to look for its cause in "acid milk acting upon the lead of milk-cans," or in the milk of any diseased cow; so the folly of the remarks attributed to me by Messrs. Taylor, Greaves, and Locke, is apparent. The former being the cause of the epidemic, was only a thought of short duration in the early part of the outbreak; whilst the latter I have proved, and still maintain, had some influence on the disease; but I never for one moment asserted it to be the true cause.

I am, yours, etc.,

JOHN ROBINSON, M.R.C.S.L. and L.S.A.

Dunscar, *August 9th*, 1878.

"Station Road, Chapel Town, Turton, *August 2nd*, 1878.

"DEAR SIR,—In the *Veterinary Journal* for July, 1878, I find my name attached to a certificate appended to a letter on the "Eagley Milk Poisoning Epidemic," by Messrs. Taylor, Greaves, and Locke; and I now beg to inform you that I signed the same without reading its contents, being hurried at the time—the said certificate, already written, being brought to the railway station by Mr. Greaves, who met me there as I was returning from a journey and asked me to sign it. In answer to my inquiry as to its purport, Mr. Greaves said it was for insertion in a little pamphlet he was getting up. Had I fully understood its contents, I should have refused my signature.

"I wish to state, in contradiction, that no milk had been sold at Eagley after February 4th, the people refusing to have it, in accordance with your orders. The ground which supplied the polluted water had been visited by yourself, your son, and myself, accompanied by Dr. Sergeant, Medical Officer of Health for Bolton, three days previous to the visit of the veterinary surgeons, and the cause of the epidemic discovered. Messrs. Greaves, Taylor, and Locke saw nothing of it until February 8th.

"I remain, yours truly,

"JAMES HOYLE, *Inspector.*

"To John Robinson, Esq., Medical Officer of Health, Dunscar."

TO CORRESPONDENTS.

"UBIQUE'S" and other communications from Correspondents, for which there was not space this month, will appear in our next.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from A. H. Santy, Norwich; A. E. Macgillivray Banff; Professor Walley, Edinburgh; J. W. Hill, Wolverhampton; "Ubique;" J. B. Coleman, New York; J. Robinson, Dunscar; H. Thompson, Barrackpore, India; "Artemus Secundus"; Professor N. Cressy, Vermont, U.S.A.; S. Locke, Manchester; D. Hutcheon, Liverpool; W. Broughton, Leeds; R. Paterson, Downham, Norfolk; L. Butters, Norwich; W. A. Hurrell, Southminster; S. M. Wilson, Bolarum, Deccan, India; A. Kershaw, Spilsby, Lincolnshire.

BOOKS, PAMPHLETS, ETC.: *A. Lincoln*, The Farm and Selection; *H. Putz*, Die Lungenseuche als Gegenstand der Veterinär-Sanitätspolizei; *A. R. Wallace*, Geographical Distribution of Animals; *C. H. Hertwig*, Practisches Handbuch der Chirurgie.

JOURNALS: *Medical Press; Melbourne Chemist and Druggist; Journal of the National Agricultural Society of Victoria; Wochenschrift für Thierheilkunde und Viehzucht; Archives Vétérinaires; Recueil de Méd. Vétérinaire; Farmer; Mark Lane Express; Agricultural Gazette; Lancet; Edinburgh Medical Journal; Revue Vétérinaire; Nature; Dublin Journal of Medical Science; American Veterinary Review; Der Thierarzt; Home Chronicle; Archiv für Wissenschaftliche und Practische Thierheilkunde.*

NEWSPAPERS: *Melbourne Weekly Times; Melbourne Age; Melbourne Leader; Australasian; Melbourne Herald; Ottawa Daily Citizen; Norfolk Chronicle and Norwich Gazette; Liverpool Mercury; Stirling Reporter; Vermont Record and Farmer; Scotsman.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal" Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.

CONTENTS.

ORIGINAL ARTICLES:— Page

THE NEW ROYAL WARRANT FOR THE ARMY VETERINARY DEPARTMENT. By "Ubique" 221

ECZEMA OR OBSTINATE SKIN DISEASE OF THE HORSE. By Francis Walker, M.R.C.V.S., 7th Hussars 225

ECZEMA SIMPLEX, HUMID TETTER (W. Williams)—PRURITIC ECZEMA, SPURIOUS MANGE (Macgillivray)—AS AFFECTING HORSES, DOGS, ETC. By A. E. Macgillivray, V.S., Banff, N. B. 228

ECTHYMA. By A. E. Dalby, M.R.C.V.S., Burnham Market, Norfolk . . 232

TRAUMATIC TETANUS CURED BY NITRITE OF AMYL. By W. Johnstone, M.R.C.V.S., Manchester 234

DOUBLE HERNIA IN A BITCH: DISPLACEMENT OF THE BLADDER SUCCESSFULLY TREATED. By J. Woodroffe Hill, F.R.C.V.S., Wolverhampton . 236

EDITORIAL:—

The Title of Veterinary Surgeon 240

The Transmissibility of Contagious Pleuro-pneumonia to other Animals than the Ox Tribe 239

New Drugs, etc.: the Therapeutic Value of "Soot" 243

Normal and Pathological Pneumography. (*With eleven Illustrations*) . . 245

Government Aid in support of Veterinary Science 256

Supposed Poisoning by "Mouldy" Fodder 257

The Present State of our Knowledge with regard to the Intimate Nature of Infection and Contagion, and its Relation to the Prevention and Cure of Zymotic Diseases 258

Operation Rehearsals on Living Animals 270

Queen's Cadetships 271

Intermittent Scabies in the Larger Herbiverous Animals 271

REVIEWS:—

The Corn and Cattle Producing Districts of France. By G. G. Richardson. . 273

Anatomical Outlines of the Horse. By J. A. McBride. Revised and enlarged by T. Walton Mayer 276

PROCEEDINGS OF VETERINARY MEDICAL SOCIETIES, ETC.:—

Scottish Metropolitan Veterinary Medical Association 277

OBITUARY 285

ARMY VETERINARY DEPARTMENT 285

NOTES AND NEWS:—

Swine Plague 286

Disease among Mules in Greece 286

The Disease among Deer in Germany 286

Forage Biscuits 286

Russian Losses during the late War 287

Trichinous Pork 287

Present Value of Hunters 287

Mosquitoes and the Filaria Sanguinolenta 287

CORRESPONDENCE, ETC.:—

Meat Inspectors 288

The Treatment of "Quittor" 288

Our Fees 289

The Eagley Milk-poisoning Case 291

TO CORRESPONDENTS 292

COMMUNICATIONS, BOOKS, JOURNALS, ETC., RECEIVED 292

C. J. HEWLETT & SON,

WHOLESALE AND EXPORT

VETERINARY DRUGGISTS,

ESTABLISHED 1832.

HYPODERMIC INJECTIONS.

Injectio Atropiæ Hypodermica.

POISON.

1 gr. in ʒij.

Twelve minims to twenty-four ($\frac{1}{15}$ to $\frac{1}{8}$ grain) injected subcutaneously relieves Spasmodic Asthma, Colic, Gastrodynia, Rheumatism, Pleurisy, Pleurodynia. Price 2s. 6d. per oz.

Injectio Coniæ Hypodermica.

POISON.

grs. xx. in ʒij.

One fluid drm. to two drms. injected subcutaneously acts as a direct Sedative, especially on the Spinal cord. Useful in Tetanus, where the jaws are firmly locked. Price 5s. per oz.

Injectio Strychniæ Hypodermica.

POISON.

1 gr. in ʒij.

One fluid drm. to two drms. injected subcutaneously; useful in Tetanus, Gastro-Enteritis, Muscular Paralysis. Price 2s. 6d. per oz.

Injectio Morphiæ Hypodermica.

POISON.

1 gr. in 12 minims.

Twenty-four minims (2 grs.) injected subcutaneously will be found invaluable to relieve Colic, Neuralgia, Rheumatism, Enteritis in Horses and Cattle; used conjointly with Atropine, the action is more conspicuous and prolonged. Price 3s. 6d. per oz.

PATENT COATED HORSE BALLS

Warranted to Keep in any Climate.

SAMPLES AND QUOTATIONS ON APPLICATION.

C. J. HEWLETT & SON will be happy to forward, on application, to any Registered Veterinary Practitioner, at home or abroad, their **PRICE CURRENT** of Drugs, Chemicals, and Instruments, post free.

WHOLESALE VETERINARY DRUGGISTS,

CREE CHURCH LANE, LEADENHALL STREET,

LONDON, E.C.

XUM